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JULY 1, 1998

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CIOs' Best Bets for Business and Pleasure

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Unitrode CIO Robert [illegible] reads science fiction, the classics and an occasional management tract

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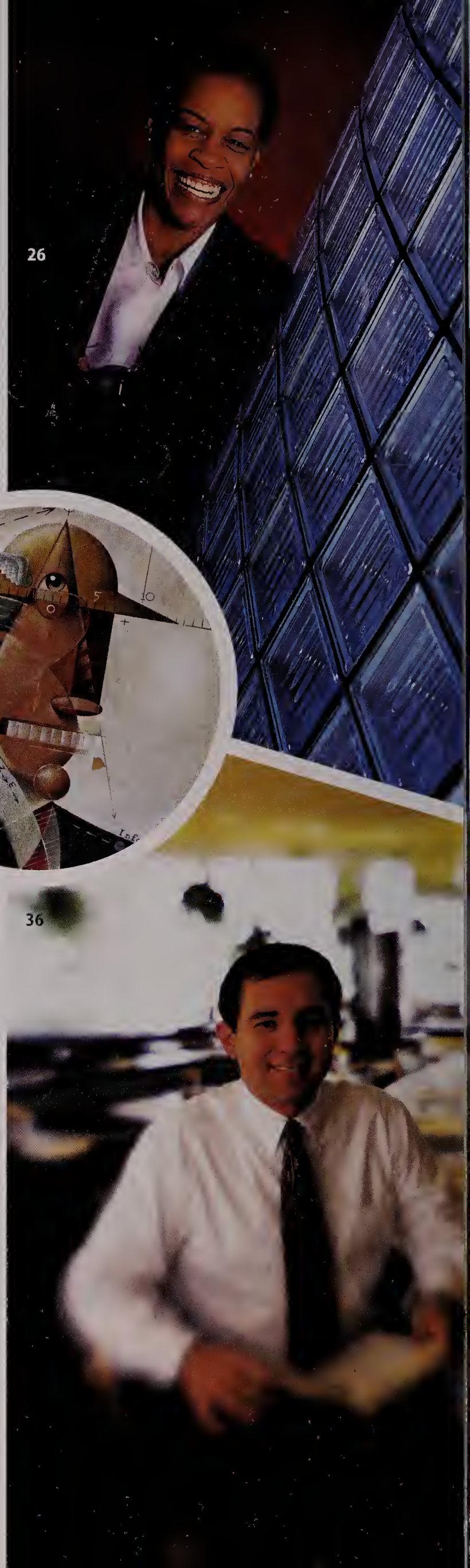
SECTION 1



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By David Pearson

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COVER STORY: SUMMER READING What's a summer vacation without a stack of books to read? Check out some new hot-off-the-press business/IT titles, and see which books CIOs are reading this summer for business and pleasure.
Compiled by Tom Field

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BENCHMARKING Experts and experienced CIOs share five lessons for effective benchmarking.
By Malcolm Wheatley

ON THE COVER:

Robert Barrett, CIO of Unitrode Corp., wades through his summer reading list.

Cover photo by Webb Chappell

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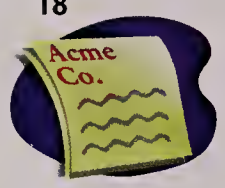

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Inside Section 2: CIO Web Business 50/50

INTERNET OVERVIEW This year's winning 50/50 Internet sites have one trait in common: They all use the Web to transform a good idea into clear business goals.

KANSAS CITY POWER & LIGHT This utility company is using the Web to win friends and influence enemies.

INTERNET PROFILES Whatever the business activity, this year's 50 Internet champions do it just as well online. Sometimes even better. Here are snapshots of a few particularly innovative sites.

INTRANET OVERVIEW The baby fat's melting away. Intranet sites that once might have settled for being big, happy buckets of information are converting calories into operational muscle.

U.S. NAVY Two winning efforts from this branch of the military: One saves money; one saves time.

INTRANET PROFILES Most intranets conserve time and money. True winners generate innovation as well.

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In Box

LETTER FROM THE EDITOR, READER FEEDBACK AND HOW TO REACH US

This issue of *CIO* may have the most varied pacing of any issue we've ever done. In honor of summer, Senior Writer Tom Field has compiled a summer reading section with contributions from a number of CIOs. They've told us what they're reading this summer for both business and pleasure and suggested must-reads for people new to the profession. This is an article you can skim at leisure, and the suggested books will offer thought-provoking, mind-expanding insight. (Though I have to say I'm glad to see I'm not the only one who reads easy-on-the-brain popular fiction for pleasure.) In case you're curious, for business I'm currently reading *Think Like a Genius* by Todd Siler, *The Circle of Innovation* by Tom Peters and *Blur* by Christopher Meyer and Stan Davis. For pleasure I'll read whatever they've got at the paperback stand that has plenty of intrigue and adventure.

Section 1 of this issue of *CIO* has its own slice of intrigue. In "Empire Strikes Back" (Page 26), Senior Writer David Pearson goes inside Empire Blue Cross and Blue Shield's 70-person fraud squad to see how a massive organization uses IT to root out fraud (one doctor cheated insurance companies out of $1.4 million before he was caught).

The action shifts into high gear in Section 2 with the second annual CIO Web Business 50/50. This year we had over 800 submissions of Internet, intranet and extranet sites. As impressive as last year's winners were, I am amazed at the ever-increasing sophistication and relevance of today's Web development efforts.

But it's July, and you have little enough time for reading this magazine or the books recommended herein. I won't add to your reading by making this letter any longer. Happy summer.

Abbie Lundberg
lundberg@cio.com

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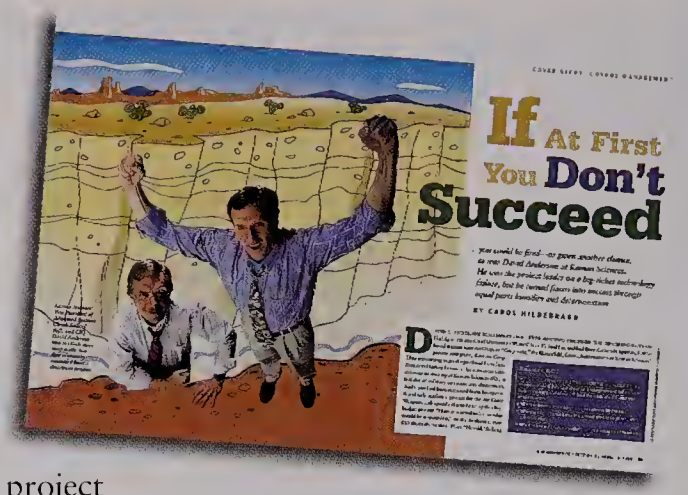

TRY AND TRY AGAIN

"If at First You Don't Succeed" [*CIO* Section 2, April 15, 1998] reminds me of a similar story I read a number of years ago about a manager who made a mistake while leading a project to construct a new computer plant. The mistake cost more than $250,000, a sizable amount in 1970. When the manager was called on the carpet by his boss, he said, "I guess this means I'm fired?" The boss replied, "Hell no, I've just spent over $250,000 on your education!" If my memory of the story serves me, I believe the manager went on to be a productive leader for the company.

Dennis Kolda
IS Manager
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This is one of those stories only *CIO* knows how to get. It's not a tedious user "success story" where everything is happy and no names are named and nobody makes mistakes except long-gone previous managers. In *CIO*'s world, real people struggle with real trade-offs, make real mistakes, deal with them and share real lessons they've learned the hard way. Like so many other *CIO* stories, this one offers value by telling readers what they really want to know: What mistakes did you make? What wrong assumptions backfired on you? What products did you try that didn't work, why did you reject some vendors and choose others, and what did you dream up to make the products and services you chose really work?

It's these tales of scraped knuckles and human mistakes and scrambling to recover that we can relate to and that make us more effective decision makers—and also let us know we're not the only ones struggling. That you can persuade managers to share their failings proves how much your readers respect *CIO* and each other. My hat's off to you.

Michael McCarthy
President
Web Publishing Inc.
San Francisco
mac@wpi.com

Editors' Note: *Thanks for your kind words. We think this type of story is valuable and we're always glad to hear from people willing to share their experiences with us and their fellow readers.*

PUT SUPPLY CHAINS FIRST

After studying the Y2K problem for the past few years, it has become evident to me that problems related to a company's supply chain may be more pressing than those related to its internal systems. This year I began advising colleagues to optimize their operations and reduce their electronic dependencies on outsiders. Most think I am preaching isolationism. Gary Beach's publisher's note [*CIO* Section 1, April 1, 1998] makes the point. Companies need to fix what they can control and distance themselves from problems they most likely cannot influence.

Beach's comment about baby boomers exiting the stock market is no joke. My plan is to move to cash in 1999, let the dust settle and come back into the market strong once the survivors have established themselves.

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Publisher's Note

As the Microsoft antitrust case evolves, the most devastating long-term impact on the company may have nothing to do with the case being tried in Washington, D.C. And everything to do with people.

This case presents Bill Gates with a challenge similar to one you face as CIO: how to attract and retain smart information technology workers. Here's my reasoning.

For 23 years Microsoft Corp. has built a business by attracting smart, bright people to work for the Redmond, Wash., software giant. While base salary packages are competitive, many are drawn to Microsoft by incredibly large stock options and the lure of changing the world of computing. Everyone likes the arrangement: Microsoft because it doesn't pay lots of hard currency in base salaries; the employees because they have an opportunity to strike it rich one day with valuable stock options.

But what impact could a protracted Microsoft/Department of Justice lawsuit have on the people who work for Microsoft and the people you serve with your IT infrastructure?

Plenty. And none of it is good.

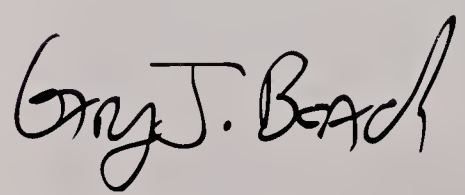
Let's look at Microsoft. It doesn't matter who is right or wrong in the suit. Just the continued presence of it will cause a sizable number of smart information technology workers to look elsewhere for work. How many current Microsoft employees will decide it's time to cash in the stock options and move on—possibly to Microsoft competitors? Over time, this potential brain drain could seriously threaten Microsoft's business model.

How does it affect you? Forget all the browser and Windows 98 brouhaha. The product most important to Microsoft's future is Windows NT. Windows NT is making strong headway with users in the application-server market. But what Microsoft really wants is a large piece of your mission-critical operating system budget. If you buy into my Microsoft people problem, the big question you have to ask is this: Will the Microsoft of the future have enough capable people to support and enhance Windows NT—both as an application and an enterprise OS—well into the 21st century?

How CIOs answer that question will determine the fate of Microsoft.

Frank Dzubeck, an industry analyst who closely followed the IBM Corp. antitrust case in the 1970s, recently said this about the Microsoft suit: "Win or lose, once an antitrust case is filed, a company experiences morale problems. It's no longer the height of glory it once was."

Will May 18, 1998, the date the Microsoft antitrust case was filed, go down in history as the end of the height of glory for Microsoft? Only time will tell.



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Trendlines

NEWS, INSIGHT, HUMOR, REVIEWS

Edited by Katherine Noyes

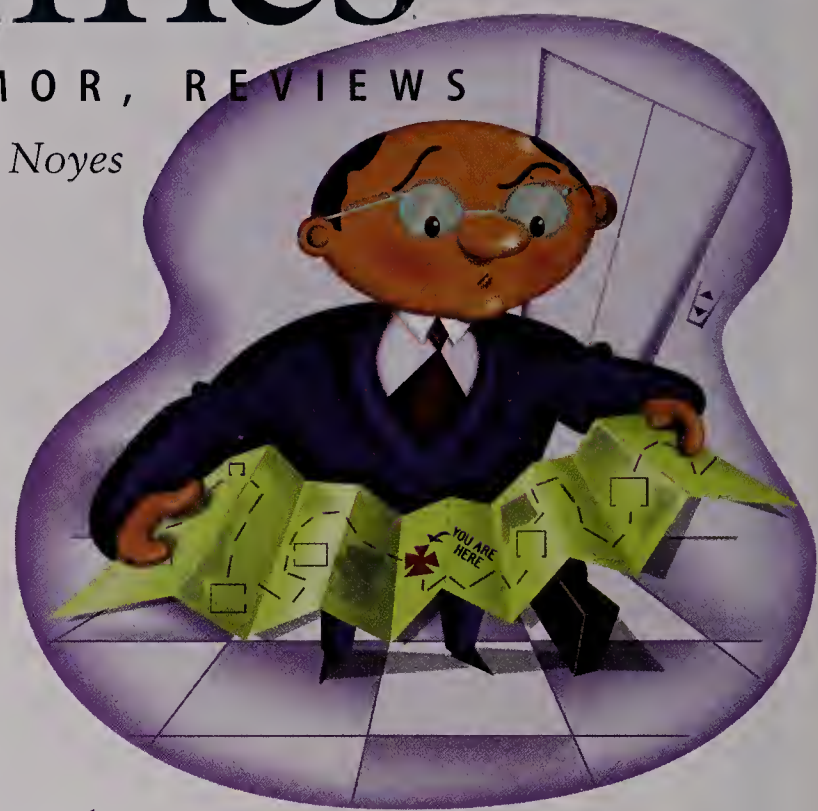
When You're New on the Block

CONSULTING SERVICE Imagine it's 8 a.m. on your first day of a new job. You're the new CIO for a major corporation, and the CEO has high hopes for what you can do for the company. What should you do to make sure you get off to a running start?

You might want to check in with the folks at United Management Technologies Inc. (UMT). The New York City-based IT consultancy recently announced a service designed specifically to help newly appointed CIOs conduct enterprisewide IT assessment and alignment in 15 to 75 days. Called CIO RoadMap, the fixed-cost, fixed-time consulting service can help you measure, analyze and benchmark the strategic business value of your enterprisewide IT portfolio and align your company's IT infrastructure and IT initiatives with individual business processes and corporate goals.

"Newly appointed CIOs desperately need to get their hands around the IT portfolio they inherit and measure and maximize the strategic business value of IT," explains Mike Gruia, president of UMT.

Aimed at new CIOs in companies with annual IT budgets of $20 million or more, the CIO RoadMap service includes 15 to 75 days of onsite consulting and ranges from $50,000 to $200,000, depending on the number of days and individual modules selected. For more information, contact UMT at 212 965-0550. ■



Cruise Control

I.T. IN CARS Just when you thought it was safe to leave your work at the office, technology has found a few different ways to jump into your car and stay with you on your commute home. In the example guaranteed to pique the interest of frequent travelers, Intel Corp. has teamed up with Microsoft Corp., Ford Motor Co.'s Visteon subsidiary and other key players in the automotive industry to develop PCs for automobiles. The computers, available late this year, will initially grant drivers voice-activated access to e-mail, a cellular phone and navigation devices. And parents take note: Eventually, passengers will be able to surf the Web from the back seat, perhaps cutting down on the "Are we there yets" from the peanut gallery. Prices for auto PCs should run about the same as those for desktop PCs, according to Intel.

If you're paying too much attention to what Web sites your kids are checking out to watch the road as carefully as you'd like, Delphi Delco Electronic Systems in Kokomo, Ind., is among the companies working on automatic collision avoidance products. Among those is adaptive cruise control, which will be available as a dealer-installed option and will use radar and laser technology combined with a sensor on the car to conform an automobile's speed to surrounding traffic even while cruise control is engaged.

TOP ILLUSTRATION BY JOHN URSINO; BOTTOM ILLUSTRATION BY J.D. KING

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Trendlines

"Adaptive cruise control [manages] vehicle speed to adapt to the pace of the car in front of you," explains Kathy Fleck, product line manager for Forewarn products at Delphi Delco. The system should be available by 2000.

Should preventative measures fail you, take heart in the automatic collision notification (ACN) system from Calspan Operations Veridian in Buffalo, N.Y. Currently undergoing field operational testing funded by the National Highway Traffic Safety Administration, the system uses accelerometers, algorithms in a digital processor and a global positioning system (GPS) to report the location and severity of a crash to the proper authorities—sending for aid if accident victims are too hurt to call for help themselves.

"There's nothing magical about predicting accidents; airbags do that already," says Alan Blatt, a program manager for Calspan. "What separates this device is getting that information into the hands of the people who can use it." ACN is a standalone system that can be easily installed in vehicles.

When combined, these new advances could help cut down on traffic fatalities while making sure drivers don't have to free themselves from the Internet tether unless they want to. Techno-savvy drivers, start your engines.

–Meg Mitchell

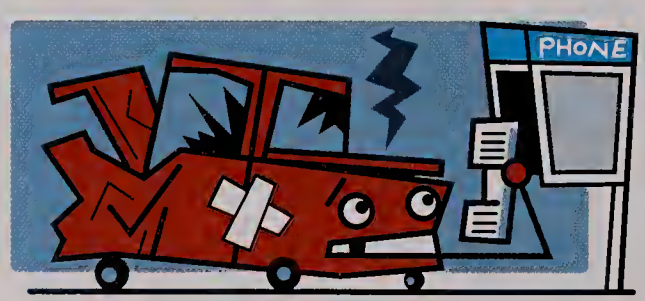

ILLUSTRATION BY J.D. KING

Findings **Year 2000**

An Optimistic Outlook

Back in 1996, International Data Corp. stepped out on a limb when it predicted that, despite a cacophony of warnings from industry pundits and media prognosticators, the year 2000 wouldn't spell disaster for most large companies. IDC based the forecast on a survey of IT executives across six industries. In March of this year, the Framingham, Mass.-based IT research firm (a sister company to CIO Communications Inc.) completed a broadened and updated status report on the situation—and it's standing by its earlier findings.

"We continue to predict that the Y2K problem, although it is serious, will not be catastrophic," says Thomas D. Oleson, IDC analyst and co-author of the latest study. "It may be a rough and stressful ride for some companies, but most will survive the trip."

That's not to say, however, that the latest report, which incorporated data from approximately 300 respondents in 17 industries who are either Y2K project managers or the executives to whom the project managers report, is all rosy. While it presents plenty of evidence that large companies, especially those in highly date-sensitive industries like banking and insurance, are making steady progress toward compliance, it also indicates that many smaller companies (those with revenues under $100 million) have not seriously addressed the problem—and concludes that too many companies of all sizes lack adequate testing processes.

In the survey report, IDC predicts that 10 percent of large companies will not complete their Y2K projects by 2000, and that the figure may approach 20 percent for smaller companies.

The survey also found that Y2K spending as a percent of an average company's IT operating budget for 1998 is a whopping 52.6 percent. This contributed to a spiking of the average total 1998 IT operating budget to 4.8 percent of revenue (the IT operating budget usually ranges from 2 percent to 3 percent of revenue). Actual Y2K spending for all companies averaged $576,000 in 1997.

The complete report can be ordered online at *www.idcresearch.com*. For more on Y2K preparedness, see "It's a Cloud, But It May Have a Silver Lining," Page 18.

–David Pearson

The Revenue Connection

Among 300 companies, weighted by company size, Y2K status varies according to annual revenues

Company Revenues	Not Yet Evaluated Y2K Problem	Evaluated, But Not Started	Correction In Process	Project Completed	Total
<$10 million	6.3	14.7	13.7	6.7	41.3
$10M-24.9M	1.3	5.0	11.0	6.7	24.0
$25M-49.9M	1.3	1.3	5.0	5.0	12.7
$50M-99.9M	1.3	1.3	15.0	2.7	20.3
$100M-499.9M	–	–	1.3	–	1.3
$500M-999.9M	–	–	–	–	–
$1B or more	–	–	0.3	–	0.3
Total	10.3	22.3	46.3	21.0	100.0

SOURCE: INTERNATIONAL DATA CORP.'S 1998 YEAR 2000 SURVEY. NUMBERS HAVE BEEN ROUNDED TO ONE DECIMAL PLACE.

CIO PERSPECTIVES

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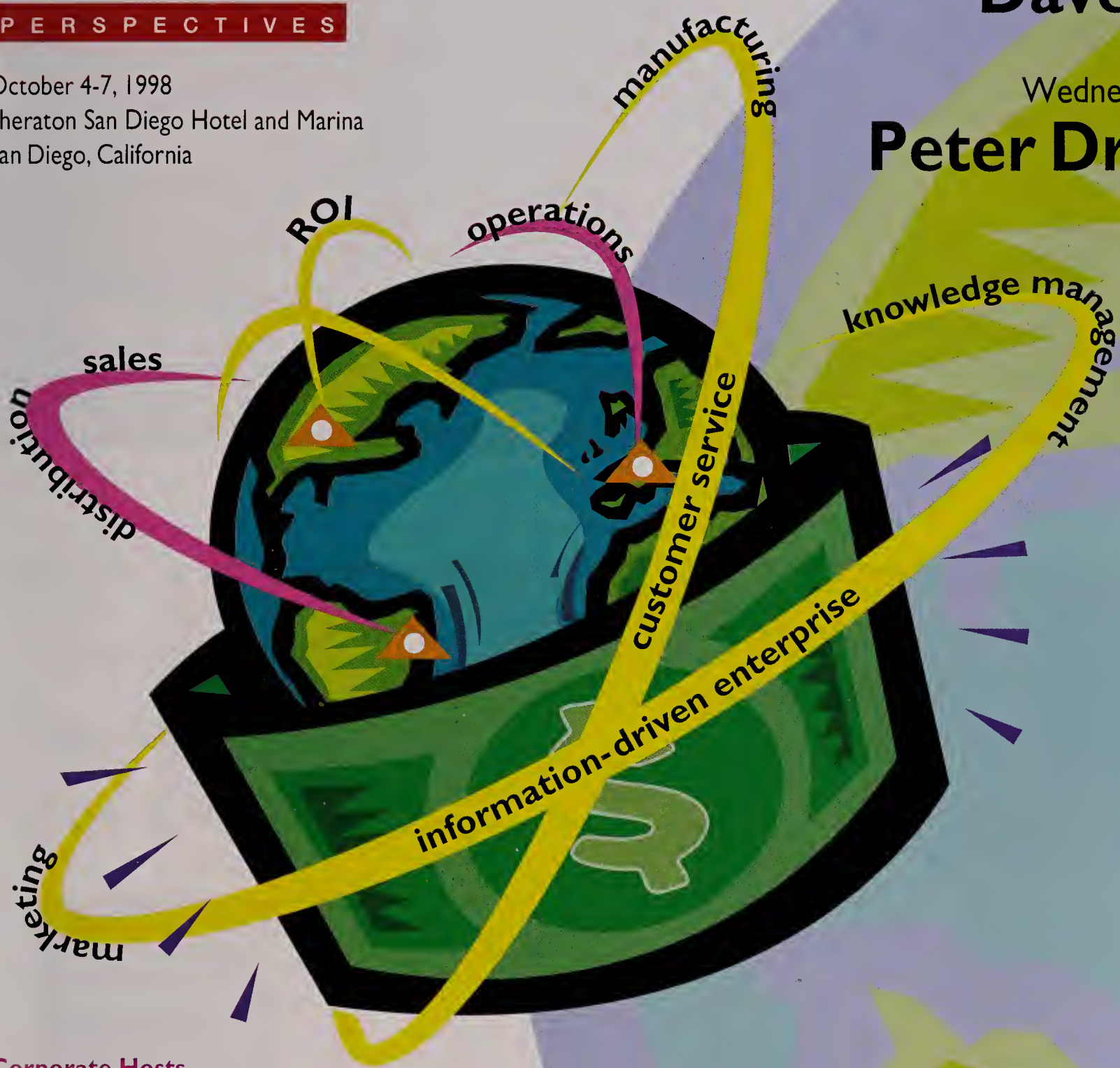
Wednesday Keynote
Peter Drucker



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Trendlines

Let There Be Light

LIGHT-EMITTING TECHNOLOGY Greeting cards that sing little musical messages are one thing—greeting cards that flash them in a variety of colors and shapes are quite another. But watch for such luminous items appearing in a store near you sometime in the next year to 18 months. After that, look for light-emitting transformations in technologies as varied as computer monitors, in-car navigation systems and cellular telephones. Behind it all is a recent discovery by two UCLA researchers who have cracked a problem that has long had materials scientists scratching their heads: Namely, how to use a regular printer to create light-emitting designs.

In theory, light-emitting diodes can be made using liquid polymers in a two-layer "sandwich"—a conductive polymer layer and a light-emitting polymer layer—and anything that is a liquid can obviously be squirted through the ubiquitous inkjet desktop printer. But printing the light-emitting layer of the sandwich has proved difficult. "Unfor-

17 MONTHS
Y2K
COUNTDOWN
& COUNTING

It's a Cloud, But It May Have a Silver Lining

If a recent Information Technology Association of America (*www.itaa.org*) survey is any indication, the Y2K scenario is bleak indeed. An electronic poll sent to 2,000 end users of Y2K products and services resulted in 450 responses, encompassing job titles from CEOs to programmers. Some of the scarier results:

Success Rate By Deadline

- **29%** Predict they'll remediate 100 percent of systems
- **19%** Predict they'll remediate 75 percent of systems
- **17%** Predict they'll remediate 26 to 50 percent of systems
- **21%** Predict they'll remediate 25 percent or less of systems

Staffing & Tools

- **56%** Report existing staff and tools will suffice
- **49%** Report having trouble finding in-house conversion staff
- **34%** Report they have the hiring situation under control
- **27%** Report difficulty in finding Y2K tools

Progress

- **10%** Say they're in the "awareness" phase of remediation
- **35%** Say they're performing "assessment" work
- **33%** Say they're performing code conversion
- **12%** Say they're already testing
- **10%** Say they're implementing remediated code

Severity

- **94%** Agree that Y2K will be a global crisis

Hype

- **50%** Believe that consultants are not overhyping the issue
- **48%** Believe that vendors are not overhyping the issue

Awareness

- **35%** Say their company understood the problem immediately
- **31%** Say their company was initially skeptical and then got it
- **12%** Say their company is guilty of more talk than action
- **10%** Say their company is at risk of because of its slow start
- **3%** Say their company is still in denial

Problems

- **44%** Admit systems have failed in real operating conditions
- **67%** Admit systems have failed in test operating conditions

Did any good news come out of the survey? Yes, strangely enough. After reporting on a litany of dire problems, an amazing 84 percent of respondents said they thought their own businesses would suffer only minimal disruption. (See "An Optimistic Outlook," Page 16.) There was even good news for *CIO*: Sixty percent of respondents said the media is not overhyping the issue.

–Howard Baldwin

ILLUSTRATION BY JOHN URSINO

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tunately, inkjet printers spray a pattern of dots rather than a continuous film," says Dr. Yang Yang, a professor in UCLA's materials science and engineering department. Because of the gaps among them, the dots lack electrical connectivity and fail to light up.

So Yang and graduate student Jayesh Bharathan tried another approach—and succeeded. Rather than printing the light-emitting layer itself, they printed the conducting polymer layer in the shape of the pattern—a message or logo, for example—onto a transparent electrode made from indium tin oxide. Then they sprayed on a continuous light-emitting layer, free of the gaps that caused the earlier problems. The result: printed images that emit light.

But the real applications of the technology go beyond creating light-emitting designs on paper. Make the substrate a plastic film, notes Yang, and "you can forget LCD displays. You've got small, cheap, multicolored screens that can be used in cellular telephones or in-car navigation systems." Those, he predicts, are about five years away. After that—well, how about computer monitors just 1 mm thick? According to Yang, they won't be far behind. ■

"We're *happy* with chaos. If *everyone* standardized on *one thing*, we'd be *dead*."

–Pamela Coker
President and CEO of Acucorp Inc.
a provider of Cobol development tools

IDC'S DIRECTIONS '98 CONFERENCE IN SAN FRANCISCO, MARCH 1998

CORRECTION Allison Manufacturing, which was featured in our April 1, 1998, cover story, "A River Runs Through IT," is located in Albemarle, N.C. We misspelled the name of the town in the original story. We regret the error.

FLASHBACK

10 Years Ago In *CIO*

Ten years ago this month, *CIO* published an unusual feature, "Close Encounters of the Fourth-Estate Kind," that coached CIOs in the methods and manners of dealing with the press. The theory was that the profession was becoming so important that CIOs would increasingly become targets for business and trade press reporters.

The article passed on tips from media relations directors and marketing folk and the inside scoop from high-profile CIOs of the time such as Dave Carlson of Kmart and Ron Brzezinski of Quaker Oats. The bulk of the advice was geared toward not getting burned by reporters with hidden agendas. This isn't a problem you're likely to encounter with *CIO* reporters. But should one of us come calling—a growing possibility considering we now publish 13 to 16 features per month—there are a few things to keep in mind that will help us work together more comfortably and efficiently.

1. We are journalists, not IT practitioners or MBAs. So we may need a quick explanation or two to better understand what you're facing or doing. In any case, we won't try to fool you into thinking we know it all.

2. We care about you, appreciate the difficulty and importance of the CIO position and regard our readership as a community. But we are reporters, not friends and confidants. When you agree to an interview, whatever you say will be on the record and publishable unless you specifically request upfront that it not be.

3. We respect the pressures and limits on your time. For that reason, we will gladly send you questions in advance to make the limited interview time more fruitful. But reporters may ask additional questions that occur to them during the interview.

4. *CIO*'s ambition is to tell it like it is, without hype, spin or naiveté. Readers want to know what's really happening out there, and they tell us to write of failures as well as successes, to address the pitfalls and the perils. You can help us deliver what you want by being candid yourself—tell us your stories, warts and all. We will do our best to present the facts without embarrassing you. And we'll consider requests for anonymity.

5. Accuracy and integrity are very important to us. For that reason, we employ professional fact checkers who will contact you after the interview to verify facts. The reporter will also verify quotes with you at your request. We will not provide prepublication drafts, regardless of your corporate policy, because doing so inevitably invites editing and censorship, ultimately compromising the material's integrity.

Thanks for a decade of great interviews and fascinating stories. *–Richard Pastore*

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Apocalypse Soon

Long on questions and short on answers, a Y2K conference brings on a queasy feeling

BY SCOTT KIRSNER

IT WAS THE BIGGEST, BEST-attended year 2000 conference yet, but it still wasn't enough. "If everyone who should be working on the problem were here, we'd be in Yankee Stadium," said Leon Kappelman, co-chair of the Society for Information Management's (SIM) Y2K Working Group and the Y2K conference's chairman.

More than 1,500 people gathered in New York City in March for SPG's Year 2000 Conference and Expo. The presenters included Kappelman, economist Ed Yardeni and tireless gong-banger Peter de Jager. Each one underscored Kappelman's comment: After more than a year of awareness-raising, too few companies and government agencies are paying enough attention to their Y2K problems.

At the same time, new facets of Y2K continue to emerge, like problems with embedded chips and PCs, IT's lack of experience with contingency planning and widespread concern about how governments and the utilities industry are handling their own Y2K issues.

For these reasons, there was a surreal mood to the conference. Attendees felt that the scope of their projects is expanding as the time frame to complete them is shrinking, and yet it seems that the rest of the world regards Y2K as either a low priority or a simple fix that's not of concern to nontechnical types. Yardeni, the Deutsche Morgan Grenfell economist who has speculated about the possibility of a global recession sparked by Y2K, captured the atmosphere best in his keynote: "I don't know about you, but [Y2K] has been an *X Files* experience for me. I can't tell if I'm being paranoid, or if the rest of the world is just oblivious. Should I be taking heavy doses of Prozac? Check into the Betty Ford Clinic for Delusional Economists?"

Yardeni's line got a laugh—but it was a very sympathetic one. This audience knew how he felt. It was not an optimistic group.

Embedded Systems Dangers

Two sessions directly addressed the issue of Y2K bugs etched into embedded systems, but questions about the risks they pose were sprinkled throughout the conference. In a three-hour workshop on the topic, David Hall, a senior consultant at Cara Corp. in Chicago, said that identifying all the embedded systems throughout an enterprise is difficult, and testing them for compliance is nearly impossible.

"There's been approximately $10 billion in microprocessors manufactured and sold since 1991," Hall said. "And only 10 percent of those have gone into PCs. Finding and fixing the other 90 percent is going to be a pretty big challenge."

Hall recommended that Y2K managers get test data from vendors and then rigorously verify it. Jay Abshier, Y2K manager at Texaco Inc. in Bellaire, Texas, supported that approach. He said that his company had received assurances from an embedded chip's manufacturer that it was compliant, but after Abshier's

CORNER IMAGE BY CARL TREMBLAY; ILLUSTRATIONS BY TED PITTS

The action was fast and furious before the games even began.

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team performed an assessment of their systems, they found some systems didn't recognize Feb. 29, 2000, as a valid date. "Doing that kind of testing isn't cheap," Abshier said. "And it's something that has to be in your budget for 1999."

Separately, de Jager, in a keynote address, said that he is considering relinquishing responsibility for his Project Damocles effort. (He has since terminated the project altogether.) De Jager started the project late last year to attempt to bring more attention—and accountability—to the embedded systems issue. But now he's worried that by serving as a conduit for complaints about noncompliant embedded systems he'll be subpoenaed countless times in post-Y2K litigation. "Like everyone else here, I want to avoid the courtroom," he said.

PC Risks

Why haven't PCs been considered part of the Y2K equation? Speaker Karl W. Feilder, CEO and president of Greenwich Mean Time Inc. in Chichester, England, a provider of Y2K PC tools that researches the impact of Y2K on desktop systems, has a few theories. First, he says that few companies are selling tools to assess and fix Y2K problems on PCs relative to the number of vendors focusing on mainframes. Second, there's a psychological issue. "Most senior decision makers grew up with mainframes," Feilder says. "They think people don't do anything useful on a PC. And that's fundamentally wrong." Third, most IT organizations exercise less control over PCs than over other systems. "I spoke with a Baby Bell the other day that thought it had 50,000 PCs," Feilder says, nursing a café latte in the lobby bar of the New York Hilton. "They actually had 75,000."

Feilder pointed out that the Y2K problem on PCs doesn't end with the BIOS chip. "That's only 1 percent of the problem," he says. Feilder describes the PC problem as having five layers: hardware, operating systems, software programs, data and data sharing. He recommends addressing each of those layers the same way one would handle the Y2K project for a mainframe system: assessment, triage, conversion and testing.

And companies that allow employees to telecommute have to be concerned not only with PCs in the workplace but with PCs at home. Can organizations afford not to prepare those PCs for the new millennium? "You have to do it," says Feilder. "Otherwise, you wouldn't want to let them connect to your network. It could be seen as legally negligent."

Uncertainty About Utilities

One of the dominant worries at the conference was how the nation's power and telecommunications infrastructure will weather the transition from 1999 to 2000. While most companies take electricity and telecom service for granted, several presenters brought up troubling examples of how even isolated failures can wreak havoc on the business world. Among the anecdotes were discussions of last winter's ice storm in Canada and northern New England, as well as the lengthy power outage in Auckland, New Zealand.

"In my opinion, there is a 100 percent certainty that we will see blackouts as a result of Y2K if current trends continue," said Hall. "How long and how large will they be? I don't know." Hall, a member of the SIM Working Group, also pointed out that power plants of all types are highly dependent on security and safety infrastructures that could fail. "If the local 911 system doesn't work, a nuclear plant can't operate," he observed, noting that regulations require that staff be able to summon firetrucks and ambulances in an emergency.

The only representative of the utilities sector to speak was Cliff DeAnna, Y2K program director for AT&T Corp. in Warren, N. J. He noted that AT&T's Y2K project started in October 1996 and that the company spent approximately $100 million on it last year. But he offered only boilerplate assurances that the company's Y2K project had buy-in from top management and that AT&T customers wouldn't suffer any network outages. When asked by an audience member what the company's biggest mistake was in dealing with Y2K, DeAnna responded, "I would've started earlier."

My lunch companion one day offered a similarly disconcerting message. He was a high-ranking engineer at a Southwestern utility that operates one of the country's largest nuclear generators. "The industry has had meetings where we've discussed Y2K," he said between bites of salad. "But the resources just aren't there to handle it correctly. And that's kind of scary."

Others wondered how their companies could endure lengthy power or phone outages. "How do you create a contingency plan for having no power and no telephone?" asked one frustrated attendee during a workshop on embedded systems. The speaker could offer no good answer. On the other hand, another attendee pointed out, "If there's no power on Jan. 1, then no one has a year 2000 problem, do they?"

The Universal Scapegoat

Government-bashing is emerging as a popular pastime in the Y2K community. From start to finish at the SPG conference, nearly every workshop and keynote included at least one dig at federal, state or local government. One well-worn chestnut: "[Insert name of agency here] has announced that it will have its year 2000 problem licked. By 2020." (According to a source at IBM Corp., this joke is actually rooted in reality.)

Speakers also repeatedly questioned the sensibility of the FAA's strategy of fixing and replacing its air traffic control systems in tandem, bemoaned the resignation of top IT execs at the Department of Defense and the IRS, and wondered about the priorities of the new Y2K czar, John Koskinen, the former deputy director for management at the Office of Management and Budget whom President Clinton appointed in February.

Focusing on the shortcomings of governmental Y2K efforts has its practical side, of course: Most companies rely on services from government entities or exchange data with them. But it also seemed to serve a stress-reducing (or confidence-building) purpose. When compared with government agencies, almost any company's Y2K project looks good.

Yardeni made the Feds the butt of so many punch lines that his keynote address might have been more appropriate for a Borscht Belt audience. His talk even included a fleeting (and dead-on) Jackie Mason impression. "What is contingency planning for the FAA? Binoculars? Pin maps? Ham radio?" Yardeni asked, eliciting laughs.

"On Feb. 2, the president announced the formation of a Millennium Council," he said later. "Its job is to organize all the parties. It wasn't until Feb. 4 that the White House announced the Y2K Conversion Council and named Koskinen the head of it. And Koskinen, believe it or not, was on vacation and didn't start until March 9. That's how serious this problem is to the federal government.

"[Koskinen] also announced that he doesn't want a big staff," Yardeni continued, pausing for a moment. "If there's one time you should have a big staff, it's now. Bring in Joseph Stalin. Give these guys the authority to break kneecaps if they have to."

Petition for a Name Change

Perhaps the most sobering thought to take shape throughout the course of the conference was that the year 2000 problem is actually inaccurately named. For many companies, bugs related to the date change are already appearing. Lawsuits are being filed. And the intensity will only increase when Jan. 1, 1999, arrives, when many systems that look forward a year will encounter problems. Then there's the infamous 9/9/99, often used as an end-of-file date, and the latter half of 1999, when many companies start their fiscal year 2000. "It's scary," said de Jager, who addressed the issue in his keynote. "I scare myself sometimes."

But Kappelman offered a more positive spin. He emphasized that the Y2K project has the potential to make (or break) careers and increase IT's profile within the enterprise. Wearing a patriotic stars-and-stripes necktie, Kappelman told his audience, "We are the generals. We are the field marshals. We have to think not just about the mainframes but [about] the PCs, the embedded systems, the facilities. This is a big promotion. It's a chance to save the world. To paraphrase Winston Churchill, if the IS profession lasts for a thousand years, hopefully we will be able to look back and say, 'This was our finest hour.'" CIO

Scott Kirsner, a Boston-based writer, is working on a series of articles for CIO on the Y2K problem. He can be reached at kirsner@worldnet.att.net.

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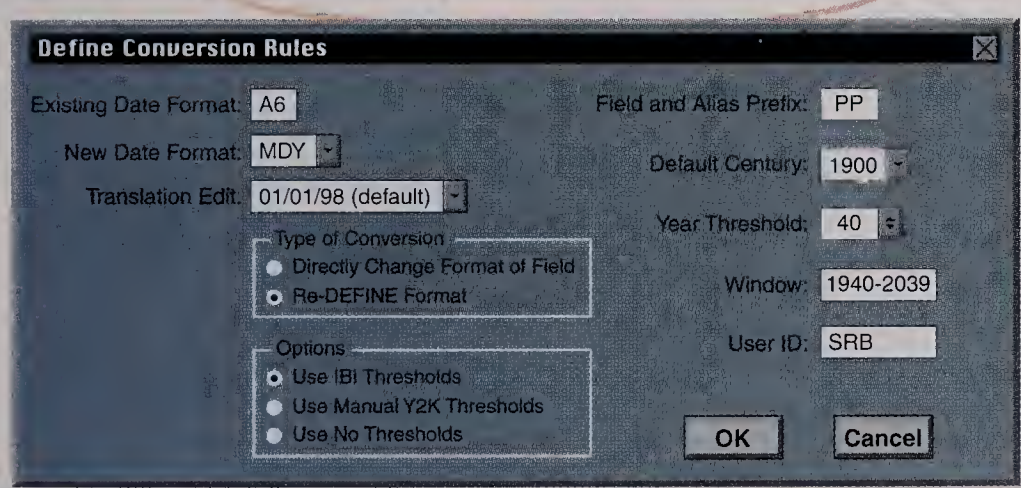

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BY DAVID PEARSON

Empire Strikes

HYSICIAN, POLICE THYSELF. You may have helped heal thousands, but if you've gotten greedy in the process, your indiscretions may catch the eye of a no-nonsense former New Jersey state trooper named Louis Parisi. Vice president of fraud investigation and detection for Empire Blue Cross and Blue Shield (an independent member of the Blue Cross and Blue Shield association) in New York City, Parisi used to patrol his beat in a cruiser with a gun. Now it's a PC and a data-mining program. And, thanks to the technology, Parisi's aim is true.

Take the case of Dr. Leon Cantor, a Long Island ear, nose and throat specialist. Over a nine-year period, he cheated a number of health insurers, including Empire, of more than $1.4 million by billing for bronchoscopies—an invasive respiratory procedure that's normally done only once or twice in a lifetime for those who need it—at the rate of as many as one per patient per week. Parisi caught up with him early in 1996, and Dr. Cantor served time in a federal prison in Lexington, Ky. Cantor has paid $586,000 in fines to Empire and turned in his medical license.

"Could we catch these people without computers? Sure, but it would take a lot

PHOTO BY CHRIS WEIL

Louis Parisi, fraud fighter for Empire Blue Cross, has decided to make technology his beat.

Back

Reader ROI

EMBOLDENED BY AUTOMATION, crooked health-services providers bilk private and government health-insurance organizations of more than $100 billion each year. Many victims stand there and take it, but a brave few are fighting back with IT tools of their own—and reaping remarkable rewards. A close look at one successful fraud squad reveals the critical role of technology in combating computer crime.

Harvard professor Malcolm Sparrow warns that improved automation can make it easier for crooks, too.

longer, and we'd catch a lot fewer people," says Parisi, whose blunt manner and brawny Brooklyn accent may well have inspired Robert DeNiro's performance in the recent film *Cop Land*. "It's like the difference between fishing with a pole or fishing with a big net," he says.

Manning the tackle at Empire is Parisi's 70-person fraud squad of auditors, analysts and investigators. These civilian gumshoes scour Empire's claims database, mining for peculiar patterns in bills submitted not only by physicians but also by skilled nurses, pharmacists, physical therapists and other licensed caregivers.

The fraud busters uncover leads by running queries through IBM Corp.'s Fraud and Abuse Management System (FAMS). The software separates routine billing patterns from unusual ones by profiling providers against one another and checking for aberrant patterns that have pointed to fraud in the past. It automatically flags potential indicators of fraud, such as how often providers perform various diagnoses and therapies vis-à-vis their peers in the same city. And it gets more street-smart by the day: Every successful investigation means more patterns incorporated into the system for automatic flagging next time they appear. When installed in 1994, Empire's FAMS system could spot just 150 patterns; now it can reveal any of 1,000.

At the first sign of a possible big catch lurking below the surface, investigators pull individual invoices and begin to ask questions. Often there's some benign explanation for suspicious sequences. But plenty of other times the evidence warrants closer inspection. Sometimes the investigators call patients. Other times they make like patients themselves and go undercover—like when they nailed a dermatologist by videotaping investigators receiving facials that the dishonest doc later billed as acne surgery.

Last year, the crew recovered—or held onto before paying—$38.5 million, up from $36.1 million in 1996, and opened 10,727 cases for investigation (2,055 of which were referred for criminal prosecution). This year the savings will easily top $40 million. Parisi declines to name the investment involved but allows that the company recoups about $12 for every $1 spent on antifraud personnel and technology.

And the potential ROI is staggering: The U.S. General Accounting Office estimates the incidence of health-care fraud at around 10 percent of all claims nationwide. (Health care being a trillion-dollar industry, that puts the loss to all private and governmental payers at about $100 billion a year.) Based on that mark, Empire—which, with 4.1 million members, paid $2.8 billion on 55 million claims in 1997—could save on the order of $300 million a year.

Of course, that would only happen in a perfect world where human effort kept pace with automated output. The squad has all it can handle reviewing approximately 1 percent of Empire's total claims load. But already the rewards have been sweet. Last year, the company passed on the savings to its subscribers in the form of up to a 10 percent reduction in premiums.

For Empire, the bottom-line success of its fraud-control system makes it as much a business initiative as a loss-prevention effort. For the rest of the world, it's a fine example of an IT application rising from a discrete tactical initiative to a broad corporate strategy—one that has not only transformed one corporation's culture but is also changing the way an entire industry does business throughout a large state. "It's not unusual for a secretary to see the Empire card and say, 'Oh, we can't take that anymore,'" says Parisi. "We've got a number of those [moments] on video."

What's Up, Doc?

Empire's commitment to fraud control is rare in an industry known for shrugging its collective shoulders over the problem. Most federal and state payers such as Medicare and Medicaid have turned up the heat since U.S. Attorney General Janet Reno declared the issue

PHOTO BY WEBB CHAPPELL

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DOWJONES

the nation's number-two law enforcement priority, second only to violent crime, in 1993. But many private payers have continued to consider fraud and abuse too complex and diffuse to deal sternly with, writing it off as a cost of doing business.

In some ways, IT has contributed to the problem and, thus, the complacency. "Health-care fraud works best when automated billing works perfectly," says Malcolm K. Sparrow, a lecturer in public policy at Harvard University's John F. Kennedy School of Government in Cambridge, Mass. Sparrow detailed the correlation in a 1996 book, *License to Steal: Why Fraud Plagues America's Health Care System* (Westview Press). (See "Eye Opener," CIO Section 1, Dec. 1, 1997, or on the Web at *www.cio.com/archive/120197_eye.html*.) "The health-care industry has embraced the claims-processing efficiencies technology offers, but it hasn't paid enough attention to the new threats that come with a high level of automation," such as people who can't resist the temptations presented by an often humanless reimbursement process, says Sparrow.

Then, too, there's the subtle nature of much health-care fraud. For one thing, there's frequently a fine line between inadvertent excess—ordering more tests than may be medically indicated, for example—and criminal fraud. What's more, patients often don't understand what has been done to them in the technical terms used on reimbursement statements, so they have a hard time verifying or refuting claims. And even when investigators strongly suspect fraud, they have to sniff out nuanced abuses like "upcoding" (giving a treatment a slightly more serious—and more costly—label than it actually warrants) and "unbundling" (billing a single operation as a number of separate procedures). Given the obstacles, it's easy to see why even those companies that are getting taken for millions often try to change the subject when asked about their fraud detection and prevention programs.

Meanwhile, Empire executives, confident in their commitment, their talents and their tools, are singing like birds. Exposure helps stem the bleeding, notes Parisi. After an appearance last year on the investigative television magazine show *48 Hours*—Empire's undercover operatives had captured the imagination of like-minded CBS news producers—claims submissions slowed considerably for about a month, says Parisi. "It was like, all of a sudden, somebody out there was getting religion," he says.

The resolve to take a bite out of fraud started at the top. When Empire's current president and CEO, Dr. Michael A. Stocker, took the helm in 1994, he set out to reduce subscribers' premiums. Aware that fraud and abuse represented a vast area of unnecessary expense, he appointed Parisi to work directly under him and to help foster a "zero tolerance for fraud" reputation throughout the industry.

Parisi has not disappointed. He's instituted a $25,000 reward program encouraging patients to rat on crooked doctors and come forward with information that will lead to the arrest, prosecution and conviction of anyone committing health fraud. Each claims document features a statement spotlighting the potential payoff and a toll-free hotline to call if the statement doesn't match the patient's memory. In addition, he distributes a snappy employee update called *Frauds of the Week*, which describes cases that the department has broken and reminds Empire staff of their shot at the prize money. Recent headlines have included "Bread and Water," about the arrest of an oncologist, dietitian and nutritionist who tried to get fat off Empire in a weight-loss scam, and "Makeup Artist," which shares news of the apprehension of a dermatologist who tried to paint cosmetic procedures as medically necessary and billed skin-care products as prescription drugs.

There's even an advertising and public relations effort to get subscribers of competing insurers to call the hotline—800 IC-FRAUD—and those calls receive the same kind of attention an Empire lead would command. The reason? "If they're hitting the competition, they're probably hitting us, too," says Parisi. "Not only that, but this is not a victimless crime. We all pay for it."

Along with the don't-mess-with-us image, Parisi brought Empire a long track record of technological know-how. In 1987, he automated the then-manual fraud division of New Jersey's department of insurance, allowing it to increase its caseload from 600 per year to more than 25,000. And between 1967 and '78, he served on the U.S. House of Representatives' Select Committee on Assassinations in its high-tech investigations into the deaths of President Kennedy and Dr. Martin Luther King Jr. "The first thing I learned about technology was that as soon as you buy something, three days later something better's gonna come out," he says. "That's OK, but it's always a challenge to stay on top of it."

That's where Senior Vice President of

Holding the Line Against Fraud

No matter what the industry, organizations effective in controlling fraud control are characterized by

- **A culture that does not tolerate fraud and motivates staff and management at all levels to actively combat it**
- **Controls that lessen the potential for fraud**
- **Clear procedures for the detection and reporting of fraud**
- **Emphasis on the creation of audit trails from any unsupervised or remote activity**
- **A continuous improvement process, where the results of organizational learning are integrated into management controls and reporting procedures**

SOURCE: PRICE WATERHOUSE

WHAT'S IT GOING TO TAKE TO WORK LIKE ONE COMPANY INSTEAD OF JUST A COLLECTION OF OFFICES?!

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Information Technologies and CIO William B. O'Loughlin comes in. Or stands back. "Lou has pretty much been able to go it alone," he says. "We support [his division] to make sure the hardware and operating software stay up. And, if they need to make changes to run extracts off the main data warehouse, we help with that. Other than that, it's just a matter of keeping the lines of communication open so that ideas get exchanged on new products and opportunities." O'Loughlin adds that, while Parisi's group includes no dedicated IT staff, there are eight "power users" who act as a bridge between their division and Empire IT.

With everything under control in the fraud squad, O'Loughlin has begun to consider how the investment in pattern recognition might be leveraged elsewhere in the organization. "We've had some discussions with IBM on the idea of applying the fuzzy logic which FAMS uses to look for medical management opportunities," such as uncovering patterns in clinical outcomes to help caregivers select the most efficacious and cost-effective treatment options, O'Loughlin says. "Nothing solid yet, but it could turn into an important opportunity for us."

Trick or Treat

Whether governmental or private, payer organizations have had to ratchet up their reporting procedures in the wake of strict federal compliance regulations, passed earlier this decade, which aim at cutting off fraud and abuse before they happen. "It's easy to inadvertently run afoul of the law," for payers and payees alike who submit or process incomplete, or even slightly inaccurate, claims forms, says Donald B. White, media relations manager for the American Association of Health Plans in Washington, D.C.

At Empire, providers who make a habit of being sloppy with their claims attract the attention of a 12-person subgroup within the fraud squad. Along with investigators, analysts and auditors, the division has its own claims-processing operation to handle all bills that come in from flagged providers—unbeknownst to the claimants, of course. And if you've got a previous record of bad behavior, you can bet it's going to be a while before Lou Parisi unflags you. "We're always looking for whether they're becoming naughty boys or girls again," he says.

Parisi's comfort with technology and bulldog approach to catching scheisters challenge CIO O'Loughlin to stay sharp himself. "Working with [an independent, tech-savvy department] means constantly having to watch for developing technologies," he says. "You have to ask yourself: What might help a business unit like that do its job a little bet-

Instant Inspections

HMOs help heal fraud by staying one step ahead of the bad guys

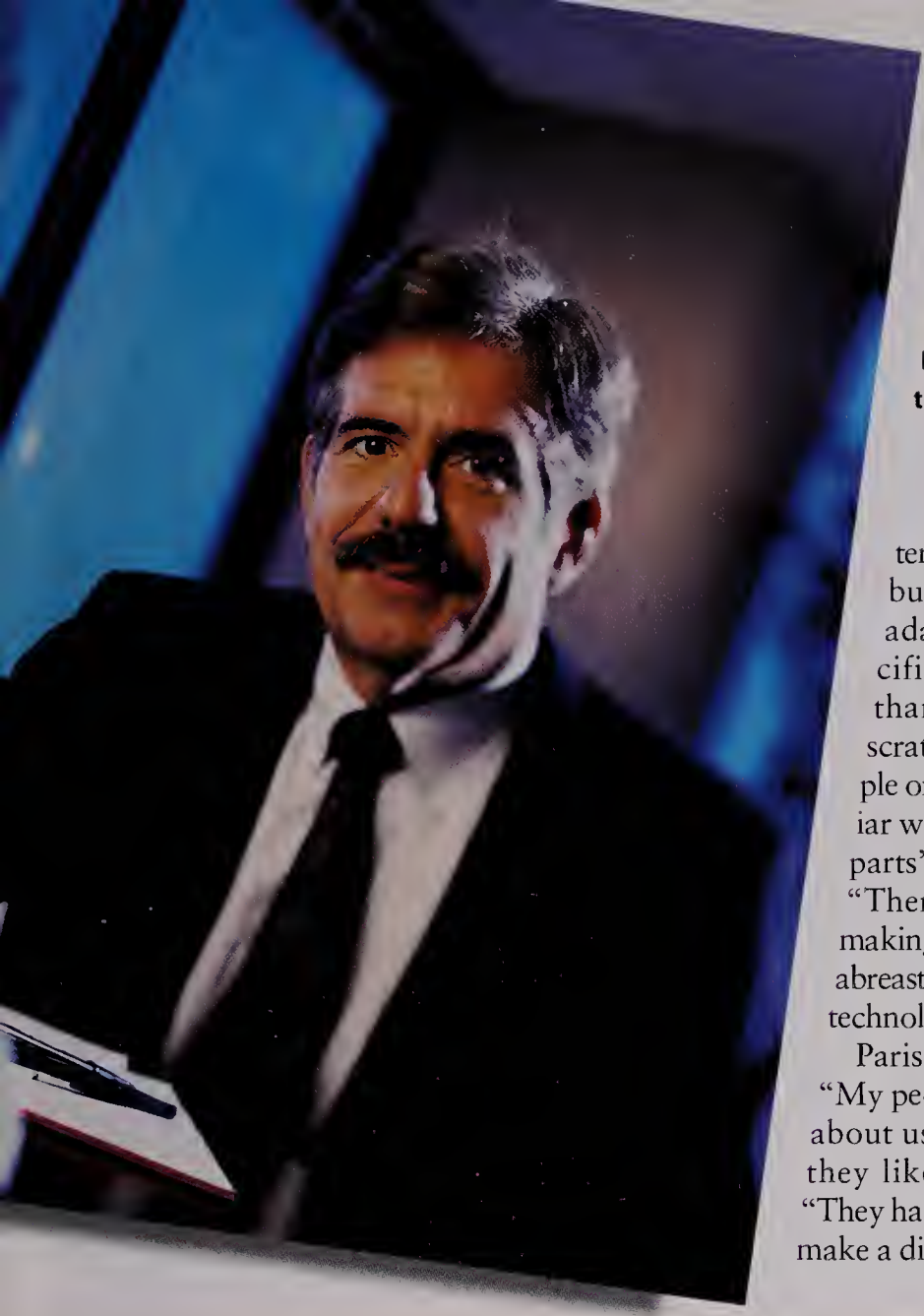
ACCORDING TO THE National Healthcare Anti-Fraud Association of America in Washington, D.C., Empire is one of only a half-dozen or so private health insurers in which the head of a fraud-control unit reports directly to a chief executive. The fact that there aren't more with a similar org chart is at least partly due to the fact that Empire still does health-care insurance the old-fashioned way: It offers indemnity plans, which reimburse providers on a fee-for-service basis. The more care the providers provide, the more they stand to make. That makes Empire something of a dinosaur.

At Harvard Pilgrim organizational priorities are IT priorities for CIO Debra Speight.

In the years since 1992, the year Hillary Rodham Clinton scared health care into beginning to "reform" itself, most Americans have been moved into "capitated" plans. These plans pay providers a set amount for a given diagnosis: Provide efficient care and make money, or provide too much or inefficient care and lose it. Fee-for-service enrollment among employer-sponsored individuals dropped from 52 percent in 1992 to 15 percent in 1997, according to the Mercer/Foster Higgins National Survey of Employer-Sponsored Health Plans, a widely followed barometer of employer health costs.

Capitation affords fraudsters far fewer opportunities for chicanery, so fraud control is less of a concern for HMOs than it is for indemnity insurers like Empire and other Blue Cross and Blue Shield carriers.

That doesn't mean it's not an issue at all for HMOs. It just means they don't normally have a discrete division running data mining queries to find irregularities. Example: Harvard Pilgrim Health Care of Brookline, Mass., uses predefined algorithms in its claims-payment system to flag potential funny stuff during normal payment runs. The software automatically compares all payments with corresponding



Empire's CIO William O'Loughlin supports Parisi's bridge between the fraud squad and IT.

ter?" Especially when you're buying solutions and then adapting them to your specific business needs rather than developing them from scratch, you need to have people on your staff who are familiar with their business counterparts' needs, adds O'Loughlin. "Then it's simply a matter of making sure those IT people stay abreast of what's happening in the technology markets."

Parisi appreciates the support. "My people are very enthusiastic about using technology because they like the results," he says. "They have everything they need to make a difference, and it's only getting more sophisticated."

Not so for all the crooks. Take the internist who "treated" herself to the tune of $9,000 by practicing under her maiden name and billing under her married name; the family doctor who billed more than $400,000 by performing extensive heart, lung and audiometry tests on people suffering nothing more than the common cold; the radiologist who performed a quarter-million dollars' worth of ultrasounds of the scrotum—on women. And, no, we're not talking about Drs. Howard, Fine and Howard. You couldn't make this stuff up.

"I don't care what profession you're in. A certain percentage of people are going to be rotten apples," says Parisi. "And some of them are always going to try and outsmart you." Pity the poor wise guys, sidewinders and stooges who think they can hoodwink Lou Parisi's heavily armed fraud squad. CIO

Senior Writer David Pearson can be reached at dpearson@cio.com.

authorizations, points out payments larger than a designated threshold amount for review by internal auditors and holds out duplicate and even similar payments for further inspection.

"We treat fraud control as part of our day-to-day operations," says Harvard Pilgrim's Vice President and CIO Debra Speight. "Big-dollar returns aren't the main motivator in this [capitated environment]; you do automated fraud control because it is a best practice and it makes sound business sense." Speight also says fraud control is an example of how, for Harvard Pilgrim, all organizational priorities are IT priorities, and vice versa. "Any initiative you integrate into your day-to-day business systems can't be owned by any one department," she says. "You have to make sure everyone involved understands that it's a business initiative, not an IT initiative or an auditing or claims or whatever initiative."

At least one consultant backs up Speight's approach, warning health-care payer organizations not to pay for more technology than they need for effective fraud control. "You can certainly go out and buy all kinds of sophisticated data mining tools," says Greg Viola, a senior manager in Deloitte & Touche Consulting Group's fraud and abuse practice in East Brunswick, N.J., "but we've learned that you don't really need them. You can find a lot of this stuff just by doing the right kinds of online analytical processing (OLAP) against claims data. The trick is to do it in ways that the fraudsters themselves try to do."

For Diane Davis, the director of detection, analysis and research who manages the Medicaid Fraud and Abuse Detection System for the Texas Health and Human Services Commission in Austin, the challenge is keeping up with fraudulent providers' ever-sneakier schemes. It isn't easy—or cheap—to stay a step ahead of the bad guys. "Flexibility is critical," she says. "Before, if a provider caught on to what we were looking for and changed his billing pattern, nobody noticed," she says. "We just assumed the problem had stopped. This system learns how to identify new kinds of patterns on its own, so that even new [patterns] never tried before don't slip through." Running data mining queries on a neural network designed and run by a three-vendor team led by EDS of Plano, Texas, Davis generated 244 suspects in her first quarter with the system—enough to keep her seven-person fraud squad busy for months—and expects a $15 million return on her $5 million investment in each of the system's first two years of operation.

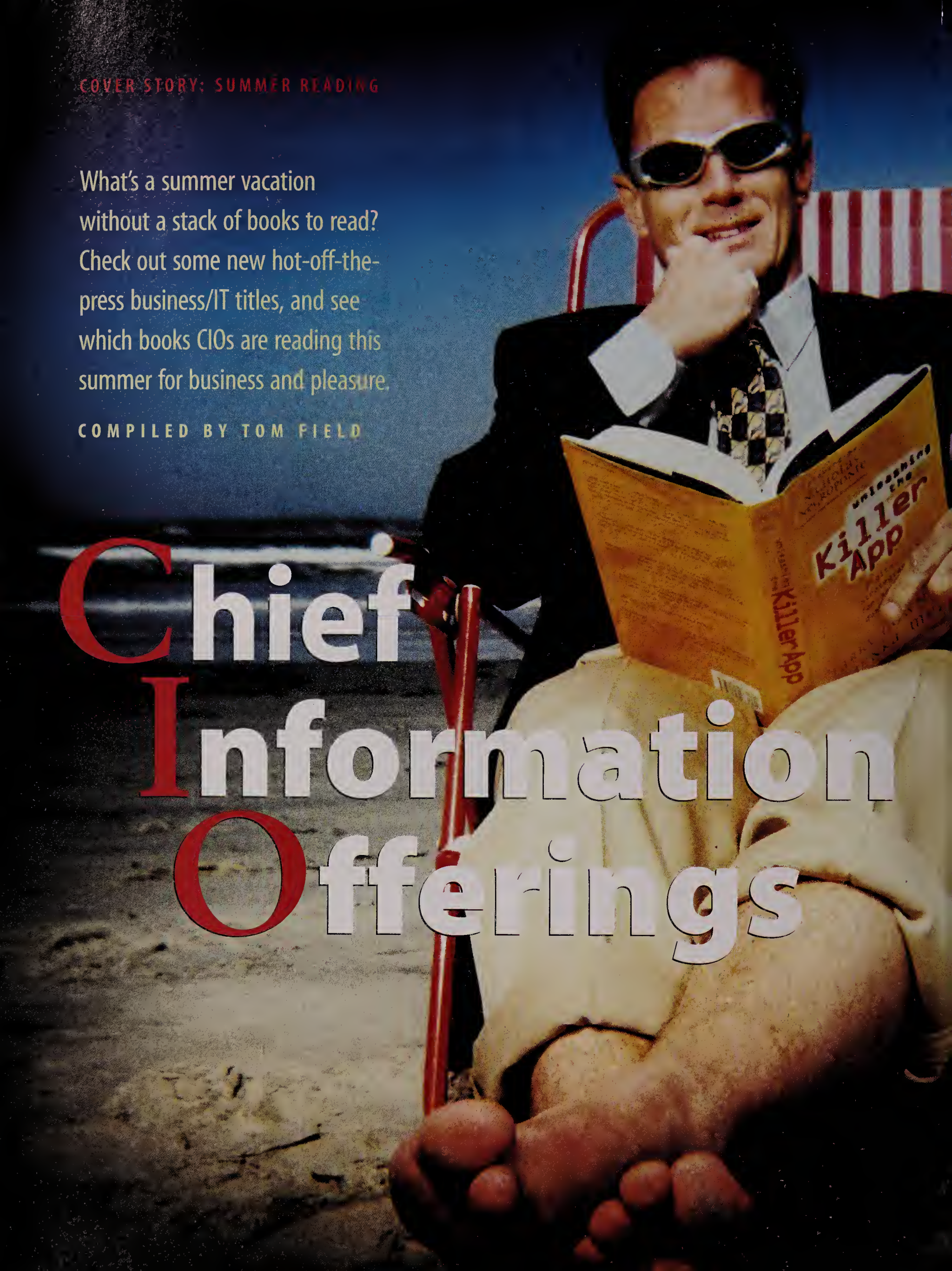
–D. Pearson

PHOTO LEFT BY GEORGE SIMIAN; PHOTO ABOVE BY CHRIS WEIL

Chief Information Offerings

What's a summer vacation without a stack of books to read? Check out some new hot-off-the-press business/IT titles, and see which books CIOs are reading this summer for business and pleasure.

COMPILED BY TOM FIELD



Beachy Keen: Unitrode Corp. CIO **Robert Barrett** *regrets that he didn't study the liberal arts enough in college, so now for fun he dabbles in science fiction, historical fiction and philosophy.*

"Outside of a dog, a book is man's best friend. Inside of a dog, it's too dark to read."

–JULIUS "GROUCHO" MARX

In the season-inspired spirit of enlightenment, we present the findings from our first annual *CIO* Summer Reading Survey. The goal: to share what CIOs are reading this summer, as well as their recommendations for essential reading year-round (the answers may surprise you), along with news of upcoming books targeting the area where business and IT intersect.

So switch off the e-mail, select a liquid refreshment and slip into a favorite chair. Summer's here; let the reading begin.

Some favorite recommendations:

ROBERT N. BARRETT

Vice President and CIO, Unitrode Corp., Merrimack, N.H.

Playing hooky: I read a mix of things for fun. Fun often means escapist books like science fiction, classics that I never got to in high school, historical fiction and philosophy—things that take me to another time and place. This helps to get my mind off typical day-to-day stresses. My problems appear relatively small when I'm thinking about life-or-death, historically significant events, or the meaning of life. However, fun can also mean popping through some of the MIS and newsmagazines that I haven't had the time to look at in a while—airplane trips are good for that.

PHOTO BY WEBB CHAPPELL

NEW & NOTABLE

What's Sizzlin'

New business or technology books available this summer

Behind Enemy Lines: A Mossad Combatant's Guide to Business Conduct, *Gerald Westerby, HarperBusiness, 288 pages, $25*
A former undercover agent with the Mossad (Israel's elite clandestine special operations force), Westerby draws on the Mossad's code of conduct and his own deep-cover exploits to create a guide for today's executive who understands that business is war.

Burn Rate: How I Survived the Gold Rush Years on the Internet, *Michael Wolff, Simon & Schuster, 288 pages, $24*
Founder of Wolff New Media, a major Internet content provider, Wolff tells his own rags-to-riches tale and shares insights on such Internet pioneers as AOL head Steve Case and *Wired* founders Louis Rossetto and Jane Metcalfe.

The Business of Consulting: The Basics and Beyond, *Elaine Biech, Jossey-Bass/Pfeiffer, 240 pages, $39.95*
A how-to book that offers tools and techniques to start and pursue a successful and profitable career in consulting. The author is president and managing partner of Ebb Associates, whose clients include McDonald's Corp., Lands' End Inc. and Hershey Chocolate North America.

The Center for Creative Leadership Handbook of Leadership Development, *Cynthia D. McCauley, Russell S. Moxley, Ellen Van Velsor and CCL Associates, Jossey-Bass, 448 pages, $65*
This guide features the Center for Creative Leadership's Leadership Development Model. In addition to presenting six developmental strategies, this resource tackles such hot-button issues as leadership development for nontraditional managers and cross-cultural leadership development.

Java and Chips: California Pizza Kitchen Director of MIS **Al Castro** *recommends books by Starbucks' Howard Schultz and Intel's Andy Grove.*

Getting ahead: I regret sometimes that I did not get a little more of a grounding in liberal arts when I was young and had the opportunity. My training and education were in hard sciences and business, not in management per se. To me, management is more of a people-skill—psychology, fathering, politics, listening and gamesmanship. My daughter is soon heading off to college for a business degree. I am encouraged that many of the business schools now combine the business degree with general liberal arts.

GARY BAXTER

CIO, Maine Employers' Mutual Insurance Co., Portland, Maine

Playing hooky: *Die Broke* by Stephen M. Pollan and Mark Levine and *The Partner* by John Grisham.

Seeking know-how: Any good speed-reading course, *Managing the Software Process* by Watts Humphrey, *The Mythical Man-Month* by Frederick P. Brooks, *Code Complete* by Steve McConnell, *Liberation Management* by Tom Peters, *How to Win Friends and Influence People* by Dale Carnegie, *The 7 Habits of Highly Effective People* by Stephen R. Covey.

AL CASTRO

Director of MIS, California Pizza Kitchen Inc., Los Angeles

Playing hooky: Dr. Seuss and other bedtime reading for my kids.

Seeking know-how: Magazines, newspapers and the reading I pull off the Internet keep me pretty busy.

Getting ahead: *Only the Paranoid Survive* by Andy Grove. It is about "strategic inflection points," those subtle changes that mark monumental changes in organizations that have been in process (usually undetected) for a long period of time. I've learned that I am always working in an organization that is in the process of change—and it is very important to my career to understand what the change is. *Pour Your Heart Into It* by Howard Schultz of Starbucks. I read it because it has a lot of relevance and parallels to my current position. If you are working in a company that started out as a small entrepreneurial venture and is growing very fast, you should check this book out. *The Fifth Discipline* by Peter Senge. Basically, I found this book to be enlightening, full of good anecdotes and examples that I still use today and overall good reading.

PHOTO RIGHT BY JOHN NOLLENDORFS; PHOTO ABOVE BY MARK SCOTT

JOYCE M. WRENN

Vice President for IT and CIO, Union Pacific Railroad Co., Omaha, Neb.

Playing hooky: My all-time favorite book is Erich Fromm's *The Art of Loving*. I keep it on my bedside table and read sections from it every couple of months. I guess you could put it in the personal development category.

Seeking know-how: CIOs need to have a great deal of knowledge and experience, and you can't boil that down into a reading list. Some books from my bookshelf that I have read in the past and found of some value are *Shaping the Future* by Peter Keen and *Paradigm Shift* by Don Tapscott and Art Caston.

Getting ahead: I read as an ongoing activity and thus the term "summer reading" really has no meaning for me. My calendar and activities are really the same in the summer as in the rest of the year.

DAVID M. COOPER

Associate Director for Computation and CIO, Lawrence Livermore National Laboratory, Livermore, Calif.

Playing hooky: *Men Are from Mars, Women Are From Venus* by John Gray.

Seeking know-how: *Visions* by Michio Kaku.

Getting ahead: *The 7 Habits of Highly Effective People* by Stephen R. Covey, *The HP Way* by David Packard and Jim Mitchell, *Only the Paranoid Survive* by Andy Grove. Covey's book is obvious, and the others give real insight into the thinking, planning and implementation by some of the giants in the industry.

In Training: You can't boil everything a CIO needs to know onto a summer reading list, contends **Joyce Wrenn**, *CIO for Union Pacific Railroad and year-round reader.*

NEW & NOTABLE

Competing on the Edge: Strategy as Structured Chaos, *Shona L. Brown and Kathleen M. Eisenhardt. Harvard Business School Press, 320 pages, $27.95*

To compete on the edge is to relentlessly reinvent—developing products on Internet time and allowing room for experimentation while letting go of rigid business plans that simply don't work in today's volatile business climate. Many Silicon Valley startups have relied on these principles to find their pots of gold. This book shows companies in all industries how to follow the Silicon Valley model of success. Brown is a consultant with McKinsey & Company Inc. in Toronto. Eisenhardt is a professor of strategy and organization at Stanford University.

Creating the Digital Future: The Secrets of Consistent Innovation at Intel, *Albert Yu, The Free Press, 256 pages, $27.50*

The manager of Intel's microprocessor products group reveals how the technology company invented nine generations of microprocessors and continues to lead the industry in architecting the future of computing.

Disconnected: How Six People from AT&T Discovered the New Meaning of Work in a Downsized Corporate America, *Barbara Rudolph, The Free Press, 224 pages, $25*

Rudolph, a 10-year veteran journalist at *Forbes* and *Time*, puts a human face on corporate downsizing, recounting the stories of six men and women who lost their jobs at AT&T—demonstrating how their experiences represent the dramatic changes taking place in the American workplace today.

The E-Myth Manager: A Guide for the Entrepreneurial Manager, *Michael E. Gerber, HarperBusiness, 288 pages, $24*

From the author of *The E-Myth* comes a simple, direct and practical guide to a new business model of antimanagement management.

NEW & NOTABLE

Fear No Yellow Stickies: Business Wisdom Too Simple Not to Know, *Richard A. Moran, Fireside, 160 pages, $7*
"If you see your name on a yellow sticky on a conference room wall, something very good or very bad is about to happen to you." From the Garrison Keillor of the workplace comes a new collection of practical, everyday business tips to rival Moran's *Never Confuse a Memo with Reality.*

Information Warfare: How Computers Are Fighting the New World Wars, *James Adams, Simon & Schuster, 288 pages, $25*
The battlefield of the future will be everywhere we live and work as information becomes the ultimate weapon. Adams, the former defense correspondent and Washington bureau chief of *The Sunday Times* (currently the CEO of United Press International), draws on 20 years of research, as well as intelligence and Pentagon contacts, to show how the computer chip has permanently changed the nature of warfare.

Managing in the Age of Persuasion: The Revolutionary New Model, *Jay Conger, Simon & Schuster, 224 pages, $25*
Selected in 1993 by *Business Week* as one of the best teachers of business management in the world, Conger (a professor at the University of Southern California's Marshall School of Business) explains the current revolution in management that is radically reshaping the way we work and shows managers on all levels how to thrive in this revolution's wake.

Sharing the Pie: A Disturbing Picture of the U.S. Economy, *Steve Brouwer, Owl Books, 128 pages, $11.95*
If the U.S. economy is booming, why are so many Americans struggling to get by? Brouwer (author of *Conquest & Capitalism: 1492-1992*) answers this and other questions, drawing upon statistics to chart a steady decline in most Americans' living standards. Brouwer attempts to puncture some of the most pervasive myths about the American economy: that foreign competitors are to blame for our economic malaise and that we "can't

COVER STORY: SUMMER READING

MICHAEL J. EATON

CIO, Sandia National Laboratories, Albuquerque, N.M.

Playing hooky: The latest Clancy and Grisham books.

Seeking know-how: *Intellectual Capital* by Tom Stewart.

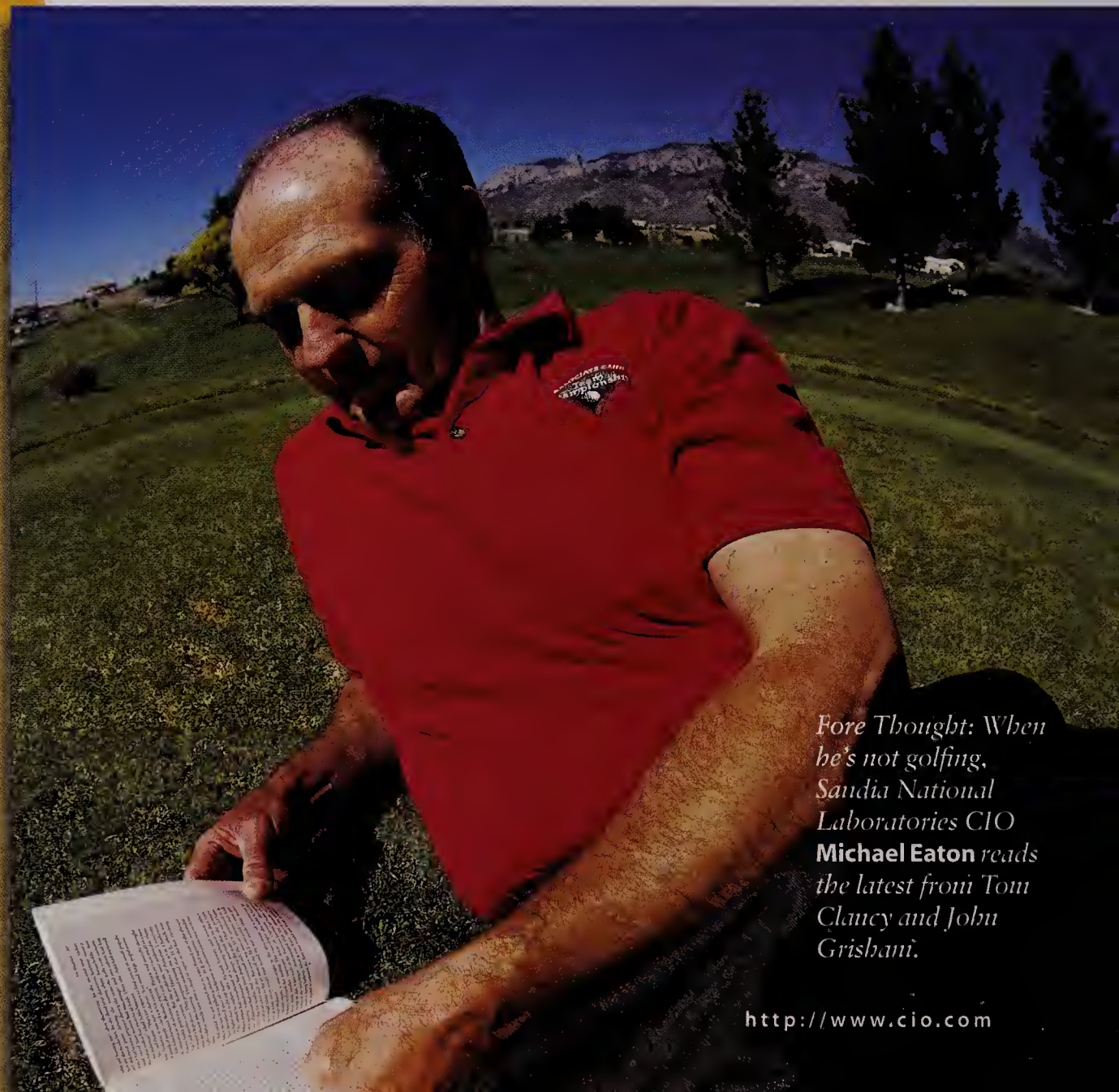
Getting ahead: *Reengineering the Corporation* by Michael Hammer and James Champy. Upon reflection, they nailed the high-level needs and all the cultural resistance that would make realizing these needs nearly impossible.

STEVEN STEINBRECHER

CIO, Contra Costa County, Martinez, Calif.

Playing hooky: Major reading for this summer will be a topographical map and trail guide. My wife and I are going back to Yellowstone for three weeks of hiking, canoeing and back-country horse packing trips with the Yellowstone Association. If I get the opportunity to read any bubble gum for the brain, give me Clancy, Grisham or something of that genre—the more techno toys the better. My wife and I buy books from a used bookstore across the street from the University of California at Berkeley, and I still have a grocery bag full somewhere around the house.

Getting ahead: I am too busy to read anything of any length these days. I listen to synopses of business bestsellers on tape between meetings and in commuter traffic, I rip-and-read *CIO, Information Week, Computerworld* and *Governing* on a weekly basis and supplement with highlights (via the Internet) each day from our local newspaper and *The Wall Street Journal.* Right now staffing issues, IT governance, infrastructure integration/management and security are high on my list of "desperately seeking" IT books, articles and the like. I will usually pick up any business-related book or article and browse just to see if I am interested.



Fore Thought: When he's not golfing, Sandia National Laboratories CIO **Michael Eaton** *reads the latest from Tom Clancy and John Grisham.*

High Tech, High Country: Summer will find Contra Costa County CIO **Steven Steinbrecher** *on the road, but when he's at home, there's a used bookstore just across the street.*

JOHN THOMAS FLYNN

CIO, State of California, Sacramento

Playing hooky: For fun, I enjoy books about the Civil War or a good Clancy thriller.

Seeking know-how: After having overseen California's $2 billion IT budget these last two years, I will enjoy working on my own book about the experience.

Getting ahead: Essential reading for the public sector CIO should probably include something from Franz Kafka, but always helpful are tomes that portray the difficulties and importance of major reform in large bureaucracies, change management and leadership. Several include *The Heritage Foundation's Mandate for Leadership* series, *Behind the Wheel at Chrysler: The Iacocca Legacy* by Doron P. Levin and *Lincoln on Leadership: Executive Strategies for Tough Times* by Donald T. Phillips.

LINDA GLICK

Senior Vice President and CIO, Levi Strauss & Co., San Francisco

Playing hooky: My tastes are very eclectic, and I tend to read novels by new American authors. I don't have a list and do impulse buys at the bookstore.

Seeking know-how: *What Will Be* by Michael Dertouzos.

Getting ahead: *Alice in Wonderland* by Lewis Carroll. Just kidding—maybe. *In the Age of the Smart Machine* by Shoshana Zuboff. I believe that the challenge with technology is the adaptation of it into the workplace. We are surrounded by technology and the real competitive need for new business models. However, if technology cannot be quickly adapted we will lose the advantage. This book addresses the human factor of technology.

THOMAS TRAINER

Vice President of IT and CIO, Eli Lilly and Co., Indianapolis

Playing hooky: I am an avid reader of good literature, which eliminates most contemporary books, which I see as stories (at best) without much regard for real character development or love of the English language. Therefore, more and more I have retreated to classics, and I must say am thoroughly enjoying reading (and in some cases rereading after many years) wonderful authors such as John Galsworthy (*The Forsyte Saga*), Honoré de Balzac (*Cousin Bette* and *Lost Illusions*) and Edith Wharton (*House of Mirth, The Age of Innocence, Ethan Frome*).

PHOTO LEFT BY JENNIFER MOLLER; PHOTO RIGHT BY JOHN HARDING

NEW & NOTABLE

afford" a government that provides decent education, health care and social services.

Strategy Safari: A Guided Tour Through the Wilds of Strategic Management, *Henry Mintzberg, Bruce Ahlstrand and Joseph Lampel, The Free Press, 336 pages, $26*

Seven years ago, Mintzberg (author of *Rise and Fall of Strategic Planning*) attempted to answer the question "What is strategy?" He researched 30 years of writings on business strategy and read deeply into its antecedents in military science and other disciplines. The result of his research is a look at the dominant schools of strategic thought.

Thinking Beyond Lean: How Multi-Project Management Is Transforming Product Development at Toyota and Other Companies, *Michael A. Cusumano and Kentaro Nobeoka, The Free Press, 288 pages, $27.50*

The authors of *Microsoft Secrets* reveal how Toyota and other leading automobile manufacturers achieve savings and growth by using shared technology and organizational capabilities across multiple projects.

Unleashing the Killer App: Digital Strategies for Market Dominance, Larry Downes and Chunka Mui, *Harvard Business School Press, 272 pages, $24.95*

Downes and Mui demonstrate how entrepreneurs and companies of all sizes can create and unleash killer apps—those discoveries that are so powerful and offer such radically better service or products that they change an entire industry. Examples include the ATM machine, the spreadsheet, e-mail and the 800 number. Downes is an independent consultant, lawyer and teacher. Mui is a partner with Diamond Technology Partners Inc. in Chicago and executive editor of that consultancy's business journal *Context*.

NEW & NOTABLE

WallStreet.Com: Fat Cat Investing at the Click of a Mouse, *Andrew D. Klein, Henry Holt and Co., 288 pages, $25*
When lawyer Andrew Klein decided to open a microbrewery, he had no intention of revolutionizing the stock market. But then he raised $1.6 million through the first independent public offering over the Internet. Klein subsequently founded New York City's Wit Capital to bring investors and capital-hungry companies together directly via the Net. This book is Klein's guide for entrepreneurs and investors alike to learn how to take advantage of Internet-enabled capitalism.

Windows NT and Unix: Administration, Coexistence, Integration and Migration, *Robert G. Williams and Ellen Beck Gardner, Addison Wesley Longman, 784 pages, $49.95*
This book will serve as a guide to help you manage a smoothly running information system incorporating both Unix and Windows NT. In clarifying the key issues you are likely to confront in dealing with the two operating systems, this book focuses on three specific areas of interaction: coexistence, integration and migration.

Winning the Global Game: A Strategy for Linking People and Profits, *Jeffrey A. Rosensweig, The Free Press, 256 pages, $30*
From a specialist in financial, macroeconomic and business forecasting comes a plan for American executives who wish to profit from the largely untapped resources of developing nations—a strategic blueprint for creating new consumer markets. Rosensweig is a finance and international business professor at Emory University's Goizueta Business School.

–Compiled by T. Field

COVER STORY: SUMMER READING

Getting ahead: To be successful, IT types must realize that there is more to the world, and indeed to business, than IT. Aspiring CIOs need to remain aware of the greater context within which they live and work. The book I would recommend is *The Road From The Past* by Ina Caro. It has nothing to do with IT and, in fact, is a beautifully written and very entertaining kind of travelogue with a twist. It takes the reader through the regions of France but in different dimensions. I think aspiring CIOs will not only enjoy the read, but perhaps will get a perspective of how people down through the ages faced and overcame great challenges by patiently solving complex problems—which at times were overwhelming—most of the time with very few weapons other than their guile and ability to create and articulate a vision which, when communicated with passion, time and again helped them achieve the seemingly impossible.

Non-Linear Thinking: For aspiring CIOs, Eli Lilly CIO **Thomas Trainer** *recommends a book that has nothing to do with IT and everything to do with achieving the impossible.*

PHOTO BY JOE HARRISON

MIKE KELLY

Senior Vice President and CIO, First Options of Chicago, Inc., Chicago
Playing hooky: *Hemingway* by Kenneth Lynn.
Seeking know-how: *Securities Operations* by Michael Reddy.
Getting ahead: Find books about your industry. Ask your CEO.

JOHN VOELLER

Chief Technology Officer, Black & Veatch, Kansas City, Mo.
Playing hooky: *Internet Dreams* by Mark Stefik.
Getting ahead: Paul Strassmann's *The Squandered Computer, Organizing Genius: The Secrets of Creative Collaboration*, a new book by Warren Bennis and Patricia Ward Biederman and *Wizards and Their Wonders*, a new Association for Computing Machinery (ACM) book that is quite inspiring. CIO

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Follow the leader

Experts and experienced CIOs share five lessons for effective benchmarking

BY MALCOLM WHEATLEY

In January 1997, Pat Carlin was assigned a new task. Pharmaceutical giant Glaxo Wellcome Inc. had recognized that it needed a call center so that medical professionals, field sales representatives and consumers could quickly obtain answers to their questions about the company's products. As the company's vice president of business process improvement at its Research Triangle Park, N.C., headquarters, Carlin's mission was to design and build a world-class call center, combining high efficiency with maximum customer responsiveness.

Call centers were a new concept in the pharmaceutical world, and with little prior experience to guide him, Carlin turned to a technique novel to the industry to help him find the answers: benchmarking. In recent years, the technique has proved popular with businesses of all types. By comparing operations with those of other companies—sometimes in very different industries—powerful and sometimes surprising pointers to greater efficiency can emerge. Carlin and his colleagues had an estimate of the workload they thought the center should be capable of handling. They also possessed a rough outline of the systems and hardware with which they thought they should equip it. It was time to hit the road to see how their assumptions fared in the harshest environment they knew: other people's businesses.

The Glaxo Wellcome team probed for tips and learning experiences—from power companies, mail-order catalog retailers, computer support centers and insurance companies—that helped them when their own customer response center went live in October 1997. And today, insists Carlin, the success of the call center is firmly attributable to those lessons the company picked up from observing how other people run their businesses. Information such as learning how to predict and staff up for periods of peak call numbers or how to anticipate possible questions callers might pose is—literally—priceless.

Yet many businesses squander such opportunities to learn from others' experiences. Effective benchmarking can transform a business's operations—but only if approached the right way. "The first mistake one can make with

Reader ROI

ADROIT PLANNING AT THE START OF A benchmarking endeavor can increase the chances that it will be fruitful later. To extract the most information from a benchmarking visit, we look at how to

- Circumvent internal "not invented here" politicking
- Treat simple metrics-based benchmarking with caution
- Maximize the probability of an effective implementation

ILLUSTRATION BY SCOTT WRIGHT

benchmarking is to think that it's easy," warns Bill Stephenson, global technology benchmarking manager at The Procter & Gamble Co.'s headquarters in Cincinnati. "The second is to think that it's quick." *CIO* offers five simple lessons to help prospective benchmarkers sort through the complexity and deliver benefits on the shortest practicable time scale.

Lesson 1 Implementation begins at the project-planning stage.

Seasoned benchmarking professionals will tell you that for a benchmarking project to deliver the goods, careful planning and preparation are essential. Yet the first lesson is one of the hardest. So take your time—and plan. Benchmarking projects must be focused on highly specific comparisons and aimed at delivering broad business benefits as well as IT cost reductions to get implemented correctly—as opposed to being filed under "interesting but not actionable." Don't rush in until you have precise questions for which you need answers.

"If you're not happy with a supplier's service, all the benchmarking in the world isn't going to fix it."

–PAUL GEARHART

"Lots of people go into benchmarking without having a clue as to what they want to do," says Paul Gearhart, director of IT procurement at AlliedSignal Inc. in Tempe, Ariz. "The first question you should ask yourself is what you're benchmarking and why." Not surprisingly, he points out, the result of not asking the right questions at the beginning is benchmarking projects that take too long and come up with inconclusive findings. Nor is benchmarking the answer for every problem. "If you're not happy with a supplier's service, all the benchmarking in the world isn't going to fix it," Gearhart adds.

"People often want to improve for improvement's sake," adds Peter Bendor-Samuel, president and CEO of Everest Software Corp., a Dallas-based benchmarking and outsourcing consultancy. Too many benchmarking projects, says Bendor-Samuel, come about because CIOs "want to be better than Joe Blow down the road." One-upmanship may yield improvements at the margin but rarely boosts the bottom line. "I'm not convinced that [a call center] that answers customers' calls on the fourth ring instead of the fifth adds any significant economic value," he says.

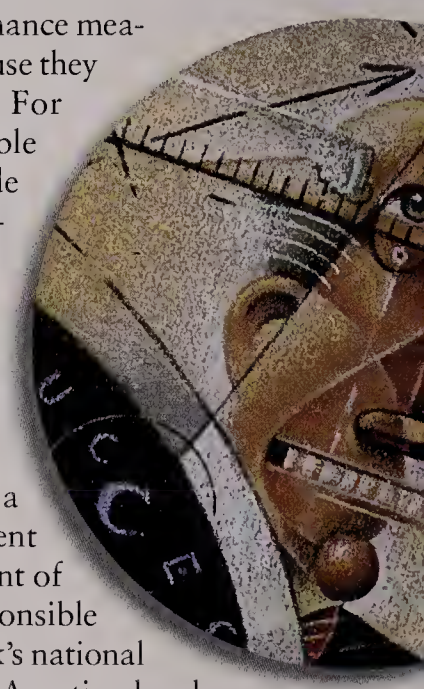
Such myopia is extremely common, says Jim Pitchell, global director of the World Class IT Assessment and Benchmarking practice of KPMG Peat Marwick LLP's Boston consulting group. In Pitchell's opinion, too many CIOs focus on stripping out IT costs instead of finding ways to use IT to generate more revenue or reduce general business expense. The latter two avenues dovetail with other board-level executives' agendas, thus boosting the likelihood of implementation.

And it's important to make sure the potential business-based benefits are communicated early on. "The key is to lock in the relationship between your project and the overall success of the company," says Don Swire, R&D director of The Strategic Planning Institute, a not-for-profit think tank in Cambridge, Mass., that since 1989 has sponsored peer-to-peer benchmarking forums for its members. "If you can't do this, it's very hard to guarantee the continuation and success of a project," he adds.

In addition to keeping senior management informed all the way through, Swire has another tip. Induct the people who are currently managing the aspect of the business being benchmarked—and who will be responsible for implementing changes—into the team. "Benchmarking," adds Warren Jeffries, customer services benchmarking manager at Xerox Corp. in Rochester, N.Y., "is a lot less successful if the people making the study then have to sell it upward. You need to have people with the authority to say, 'We've seen this at GTE or AT&T or Conoco—and now we need to make it happen here.'"

Lesson 2 Improve processes, not individual metrics.

Don't confuse exchanging performance measures with benchmarking. Statistics cannot be improved, but the operations or processes that those statistics purport to measure can. "The metric is the red light [that flashes a warning]," says Alan Gonchar, president of Reston, Va.-based Compass America Inc. But metrics themselves don't correct problems or steer people toward a solution, he adds.



What's more, top-level performance measures may disguise problems because they contain so many hidden costs. For example, says Gonchar, acceptable network hardware costs may hide high voice costs that are being offset by a company's efficient data network. To get the level of detail that yields answers, he says, be prepared to "peel the onion" by uncovering the processes and procedures people actually use.

To do that, "you have to invest a lot of time upfront," warns Vincent D'Agostino, a senior vice president of The Chase Manhattan Bank responsible for the New York City-based bank's national checking and business services. D'Agostino heads a reengineering project, now nearing completion, that will cut the number of times human hands need to touch a check "from a dozen or so times to just one or two." Reluctant to rely on metrics calculated from

survey data by third-party benchmarking companies—it's just not disciplined, he says, and people lie a lot—he joined forces with seven other major banks through the Bank Administration Institute in Chicago to investigate how Chase could improve.

Having first agreed to the joint study's high-level objective, the banks carefully defined the precise processes to be studied—and then compared definitions to ensure "that Bank A's definition of the process was the same as Bank B's," explains D'Agostino. The importance of that step is driven home by Robert C. Camp, the former Xerox executive-turned-guru who is widely acknowledged as the grandfather of benchmarking. According to Camp, now principal of the Best Practice Institute in Rochester, N.Y., the key question in benchmarking is, "Here's how I do my process—how do you do yours?"

"You have to have a baseline," he says. Understand, document and measure your own process or operation, and then compare it with those of others.

After the banks agreed on the parameters, consultants and representatives from the banks then conducted the benchmarking. The banks had agreed in advance to relinquish some of their anonymity in the benchmarking's early stages—a smart move, since the analyzed initial data contained apparently clear performance disparities that subsequent probing proved spurious. In fact, it took two annual rounds of the benchmarking exercise before all the comparison and data collection processes were deemed reliable, says D'Agostino, adding that only then was the original core group of eight banks expanded. There are now 13 banks participating. With a larger group at the outset, the comparison process probably wouldn't have worked, he adds.

Lesson 3 Benchmark against the best, not the most convenient.

"The issue isn't simply comparing yourself with one or two other companies—it's comparing yourself with the best in the world," explains KPMG Peat Marwick's Pitchell. Other experts agree that benchmarking against the average is pointless. Although serendipity may throw convenient benchmarking opportunities your way, don't place much value on them. Have a reason for making a visit or comparing notes; don't just blindly hope to get something out of it.

Casually asking around, visiting nearby operations or swapping business cards at conferences are timeworn techniques that won't pass muster. Nor will subscribing to benchmarking reports from organizations such as those Ray Khan dismisses as "good news companies." "You don't know who you're being benchmarked against," says the senior vice president and CIO of Detroit-based Blue Cross and Blue Shield of Michigan, "and you're always in the upper quarter [of companies covered]."

On joining the $6.3 billion health-care benefit business from General Motors, Khan commissioned a series of benchmarking assessments from consultants that he knew would "tell the truth, even though it might be brutal and bloody." The result? Although for its class of data center, Blue Cross and Blue Shield of Michigan was one of the top 5 operations in the United States, internationally it was only in the top 10. Why? There were too many employees required because software programs terminated abnormally five times more often than at the foremost company. Khan found that weak change-control systems were the culprit. With tighter change control, the abnormal terminations rate began to improve.

"The issue isn't simply comparing yourself with one or two other companies—it's comparing yourself with the best in the world."

–JIM PITCHELL

In the hunt for that elusive best practice, consultancies are certainly one place to start. The major benchmarking consultancies claim to be able to tell you not only how you perform but also how that performance compares to the best-in-class. But that's not the only way of finding out. Rock Regan, Hartford-based CIO of the state of Connecticut, quickly realized upon starting the job that the state's motley collection of networks and data centers was a recipe for inefficiency. The lack of IT coordination between its 65 separate state agencies didn't help. Although outsourcing appeared to offer a solution, Regan wanted to benchmark his expectations of the benefits against others' actual experiences.

A member of the National Association of Information Resource Executives, Regan visited peers in other states and federal agencies to share experiences and ascertain how they had gone about the process of benchmarking. A contact with the British Consulate in New York City led to discussions with the Inland Revenue Department, the British equivalent of the IRS, and other organizations. Regan established a contact with the government of South Australia through the Internet. "We also spent a lot of time talking to the private sector," he adds. "Our view was, the more people, the better."

Lesson 4 Structured visits yield more data.

"Seeing is believing," says benchmarking guru Camp. A benchmarking visit to another organization offers an opportunity to validate the reported performance as well as to learn how that performance was achieved and how it can be emulated back home. Yet despite that wisdom, many benchmarking visits

quickly degenerate into what Compass America's Gonchar describes as "industrial tourism."

Some simple pointers will ensure that your benchmarking visits turn out to be jackpots, not junkets. Careful apportioning of response is high on the list of priorities for Christopher Bogan, CEO of Best Practices LLC, a benchmarking research and consulting firm in Chapel Hill, N.C. Teamwork has to start before stepping through the door of another company. Of the 200-plus items on Bogan's highly detailed checklist, many relate to preparation before the visit. A structured agenda is vital, he says, if the visit "isn't to turn into a rabbit chase." Each member of the team should know exactly what his role is and understand how the information that he gathers will integrate with other information to form a coherent summary of the entire visit.

In Bogan's eyes, asking too many questions during a benchmarking visit is as fruitless as asking vague questions because it weakens the focus. It's equally counterproductive not to take copious notes. "Don't rely on your memory; use notes to summarize and verify the information that you receive," he urges.

Don't forget, too, to ask about implementation issues. "People will ask what hardware a company has, and what software they run, but what they don't ask is how they were configured to work together and how they are integrated with the rest of the business," says Bogan. Asking for learning experiences as well as factual details is vital. How long did it take to implement? Were there any particular difficulties? What would the other company do differently next time around? What resources were required? Would a "big bang" approach work best, or should implementation be phased? The answers to these questions are invaluable.

Lesson 5 Develop a targeted implementation.

Chan Pollock, vice president of IS and CIO of Storage Technology Corp. in Denver, undertakes two to four formal benchmarking studies each year. Late last year he completed a benchmarking review of the company's North American telecommunications costs. "The study had a five-digit price tag; the savings amount to seven digits," he says.

The key to emulating such slick implementation smarts can be easy, providing you adhere to some simple rules. Everest's Bendor-Samuel stresses that focus plays an important part. "Pick two or three [areas to emulate] and implement those," he says. "I see failure when people try to achieve everything all at once." "We often see good companies that have managed to botch their implementation," adds Sam Wee, a partner with Benchmarking Partners Inc., an industry analysis and consulting firm in Cambridge, Mass. "The more complex the change, the greater the risk."

To counter this, Bill Redman, vice president of Gartner Measurements, a division of GartnerGroup Inc., favors breaking down complex changes into a series of highly specific actions. "They can't be wishy-washy; they've got to be things that the CIO can go do," he says. And if you've followed the guidelines from earlier lessons regarding communication and involving the right people, the twin enemies of change—organizational inertia and corporate politics—won't kill your chances. People will know that what is being proposed matters, will understand that other businesses are already doing it and will believe that it is important for their own organizations to do the same.

"Think of a skilled benchmarking team like the Chicago Bulls; there has to be great teamwork."

–CHRISTOPHER BOGAN

However, human nature being what it is, even the most praiseworthy objectives may lose their immediacy in the day-to-day minutiae of running a business. That's where the level of detail comes into its own: recommendations and action-items that specify not just what needs to be done but by whom and when. These are then monitored and (if appropriate) linked to bonus payments. "It sounds simple, but it's an incredibly powerful approach," Redman enthuses.

In this, of course, it's much like benchmarking itself: simple, powerful and capable of delivering significant business benefits. Best practices are out there, waiting for you to identify and emulate them. And that, unfortunately for many businesses, is exactly where they stay—waiting to be identified and brought back home.

But it doesn't have to be that way. It's not metrics that count but processes. So by carefully focusing on clearly defined processes to benchmark and ensuring executive buy-in at the beginning, benchmarking exercises can get off to a good start and come to a fruitful conclusion. Filling the benchmarking team with "can-do" characters who not only can but will be operationally responsible for implementing the findings builds on a good start. At this point, don't squander the opportunity. Benchmark against the best and treat every moment of a benchmarking visit as a precious chance to extract information and implementation insights that will transform your business. This will only happen, suggest the experts, with still more focusing. Don't try to tackle too much at once, set action-oriented milestones and don't be afraid to link reward mechanisms to achievements. CIO

Malcolm Wheatley is a freelance writer in the United Kingdom. He can be reached via e-mail at malcolm_wheatley@compuserve.com.

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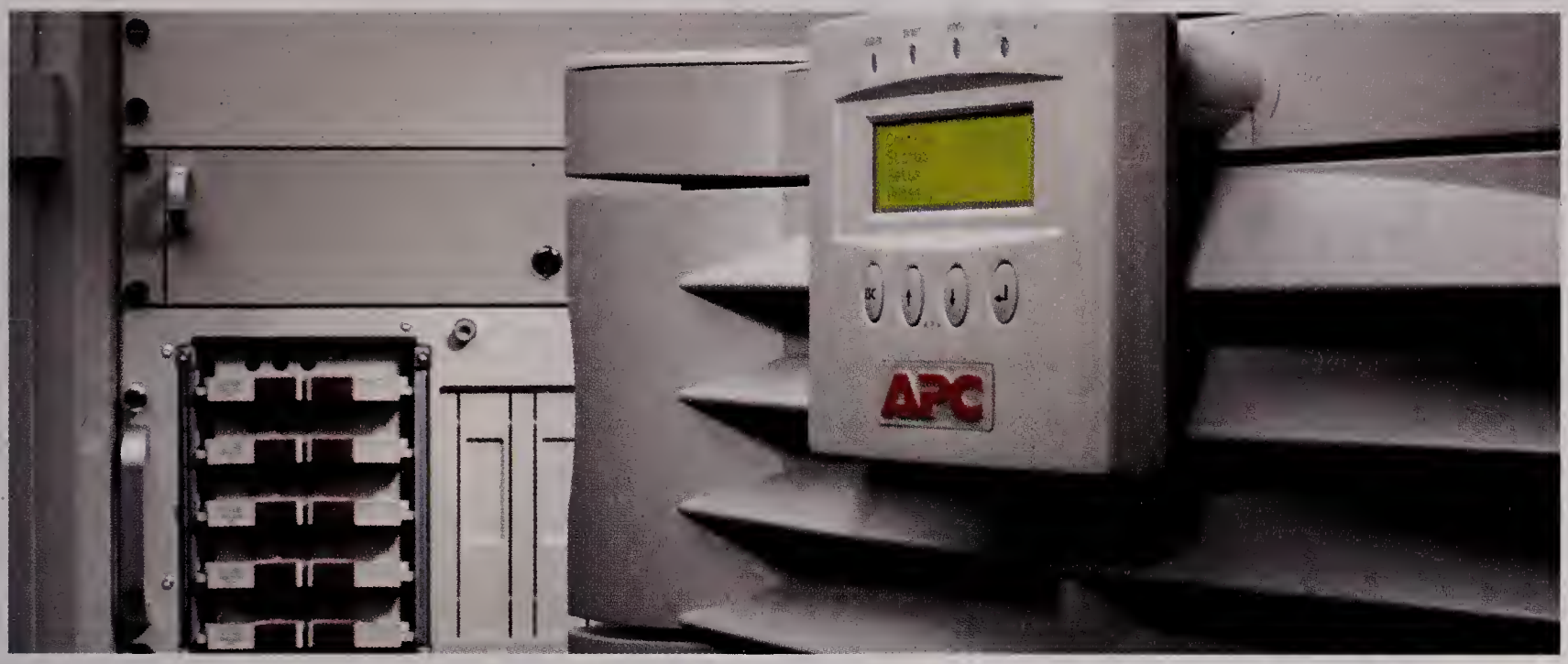

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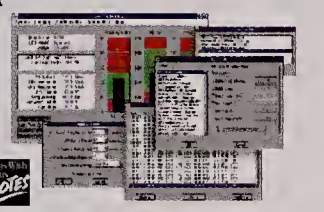

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Emerging Technology

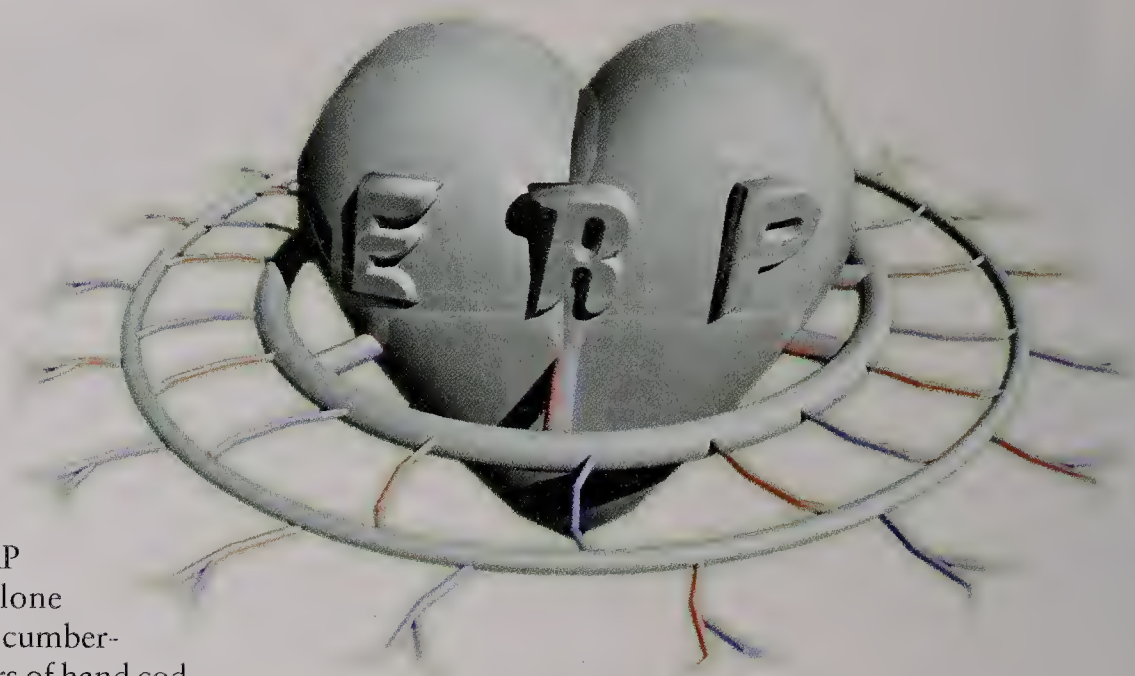
THE STATE OF THE ART, NEW PRODUCTS AND STAYING AHEAD OF THE CURVE

Edited by Howard Baldwin

Expanding the Boundaries of ERP

Enterprise systems need data from other applications, but how do you integrate them?

BY JOHN EDWARDS



IF YOU'RE LIKE MOST CIOS, implementing your enterprise resource planning (ERP) system probably wasn't the snap you thought it would be. By now, you've probably realized that data from other applications must be integrated with your ERP system.

Until recently, connecting an ERP program to one or more standalone applications has been a slow and cumbersome process requiring many hours of hand coding. But a new generation of enterprise integration application (EIA) products promises to speed the work of linking applications and eliminate or reduce the need to develop custom code.

EIA products are poised to take the IS market by storm, says Ed Acly, director of middleware research for International Data Corp., a research firm (and sister company to CIO Communications Inc.) based in Framingham, Mass. "Application integration is becoming a booming marketplace. For a major corporation, the cost savings on implementation could easily reach into the millions of dollars, depending on the scope of the project."

But finding appropriate EIA software can be a daunting task, and CIOs face a bewildering array of choices as they plan their links. The available paths include using EIA tools provided by major enterprise software vendors such as Oracle Corp. and Computer Associates International Inc., middleware vendors like BEA Systems Inc. in Sunnyvale, Calif., Level 8 Systems Inc. in New York City and Talarian Corp. in Los Altos, Calif., or startups such as Vitria Technology Inc. in Mountain View, Calif., and CrossWorlds Software Inc. in Burlingame, Calif. Some of these companies are marketing themselves as point-to-point solution providers, while others are concentrating on database-to-ERP connections. Still others promise to provide easier connections from anywhere to anywhere.

IN THIS SECTION

Speech Synthesis

Digital Flipchart

Internet Monitoring

Electronic Consulting

Moving Pictures

The Drooling Begins

With the EIA field growing at a rapid rate, vendors are anticipating a lucrative market. Joseph Chappell, president of Oberon Software Inc., a Cambridge, Mass., company that recently repositioned itself from an application development vendor into an EIA tools provider, is ready to capitalize on the market's potential. Citing internal research, he states that the funds organizations currently direct toward application integration services equal the size of the entire $10 billion ERP market. "What we're going to see over the next few years is that organizations will shift much of that outlay from integration services to integration products," he predicts.

Oberon's Prospero EIA tools are designed to give developers the ability to interconnect at a business process level an array of business applications with ERP products from J.D. Edwards & Co., SAP AG, The Baan Co., Oracle Corp. and PeopleSoft Inc. Using what Prospero calls "building blocks"—visual metaphors of

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an application, function or data source—a programmer could, for example, create links that let order management information flow among an ERP financial application, a standalone contact manager and a Lotus Notes-based field service database as if they were all related, homogeneous applications. "Think of it as 'data pumping,'" says Chappell, "forcing information from one data source to another."

While EIA products have been around for several years, it's only been over the past year that they've been fine-tuned for use with various ERP applications. "By working with the ERP vendors, we've taken a lot of the work out of creating links," explains Chappell. "We streamlined and tailored the 'building blocks' software to work with specific ERP applications, reducing the effort and expertise necessary to create different kinds of links."

Bob Kroner, manager of information technologies for Regency Realty Inc., a real estate investment trust company based in Jacksonville, Fla., estimates that using Prospero for one of the company's projects cut application development costs by about 75 percent. "It saved us several months of hand coding and, no doubt, innumerable headaches," he says.

Regency began using Prospero earlier this year to transfer accounting data out of a J.D. Edwards system into a cash-flow analysis program called Argis. "The link will give our managers the ability to analyze leases in greater detail and with better accuracy by drawing financial data directly from our accounting database," says Kroner.

Kroner next plans to use Prospero to build a link that will move lease analysis data from another application back into J.D. Edwards for use in various applications. "We'll be moving data in the other direction this time, which is something we might not have even attempted without Prospero," says Kroner.

Two Flavors

EIA solutions come in two basic flavors: tools like Prospero that give IS departments the ability to link ERP with almost any application, and products that are geared to work with only a

Tech Talk

Computers are still trying to talk, but do users want to listen?

DID YOU EVER HAVE ONE OF those cars in the '80s that told you to fasten your safety belts? Pretty eerie, wasn't it? Maybe the idea of having computers talk has never taken off is because hearing one "speak" is just a little too disturbing.

But don't go writing epitaphs for speech synthesis—a.k.a. text-to-speech—technology yet. A couple of factors are keeping it from being silenced. First, there's the increasing success of its first cousin—speech recognition, a.k.a. speech-to-text—which itself has benefited from faster microprocessors and cheaper memory. At the same time, the surge toward improving productivity makes speech synthesis appropriate in situations where you can't do anything but listen anyway.

The problem with computerized voices is they never talk as fast as the brain can think. The superiority of the computer in our skulls is what's held

SPEECH SYNTHESIS

back speech synthesis. Nevertheless, in the next version of its Naturally Speaking Developer Kit, speech-recognition leader Dragon Systems Inc. in Newton, Mass. (*www.dragonsys.com*), adds a text-to-speech capability. For Dragon, the two go hand in hand.

People are using speech to get into "hands-free, eyes-free" environments, reports Keith Byerly, product manager for Dragon's vertical and developer products. He cites scenarios as varied as assembly lines and autopsies where people need to give the computer input and get back output in the way of either prompting or verification. "There's no reason to treat them as separate processes," he says.

In a more prosaic example, Byerly talks about using a combination of speech recognition and speech synthesis for easier data entry. "Where users are navigating between fields, speech synthesis prompts them so they don't have to keep going back and forth" from the paper source to the computer screen. That's "eyes-free" computing.

Speech synthesis is also entering the realm of productivity. This summer NetPhonic Communications Inc. in Mountain View, Calif. (*www.netphonic.com*), plans to release Email-On-Call, which lets users listen to their e-mail messages from any telephone and even respond verbally with an e-mail that comes with attached sound file. This enables users to translate the time they're sitting in cars or airplanes or airports into productive e-mail processing time (whether you read this literally or sarcastically probably depends on whether you're in labor or management).

NetPhonic is using the text-to-speech technology of AcuVoice Inc. in San Jose, Calif. (*www.acuvoice.com*), which recently became a wholly owned subsidiary of Fonix in Salt Lake City, another vendor of the same kind of technology. Other development kits are available from First Byte, in Torrance, Calif. (*www.firstbyte.com*), while the Speech Application Platform from Lucent Technologies (*www.lucent.com*) was scheduled for release in May.

Ultimately, you may not be able to avoid speech synthesis. A major car manufacturer is even considering installing a speech-synthesis system that will deliver text messages that arrive via wireless modem. David Barton, president of AcuVoice, sums it up easily: "The most normal way for us to communicate is by voice. Reading and writing are acquired skills, but hearing and speaking are animal instincts." *–Howard Baldwin*

ILLUSTRATION BY JOHN HERSEY

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handful of major applications. While the wide-ranging Prospero-type solutions require a significant amount of tinkering, preconfigured solutions, such as those offered by CrossWorlds, are designed to be implemented with a minimum of fuss.

Katrina Garnett, CrossWorlds founder, president and CEO, says preconfigured EIA solutions make sense for firms that don't want to be saddled with a major development project. "Most organizations need to link their ERP to a relatively select group of mainstream applications," she observes. "Why try to reinvent the wheel when there's a simpler solution?"

CrossWorlds' software includes out-of-the-box integration for front-office to back-office applications from such vendors as Aurum Software Inc. and The Vantive Corp., both in Santa Clara, Calif., as well as ERP packages from SAP, PeopleSoft, Baan and others. The company's approach incorporates an NT-based server and a number of business process components along specific application connectors.

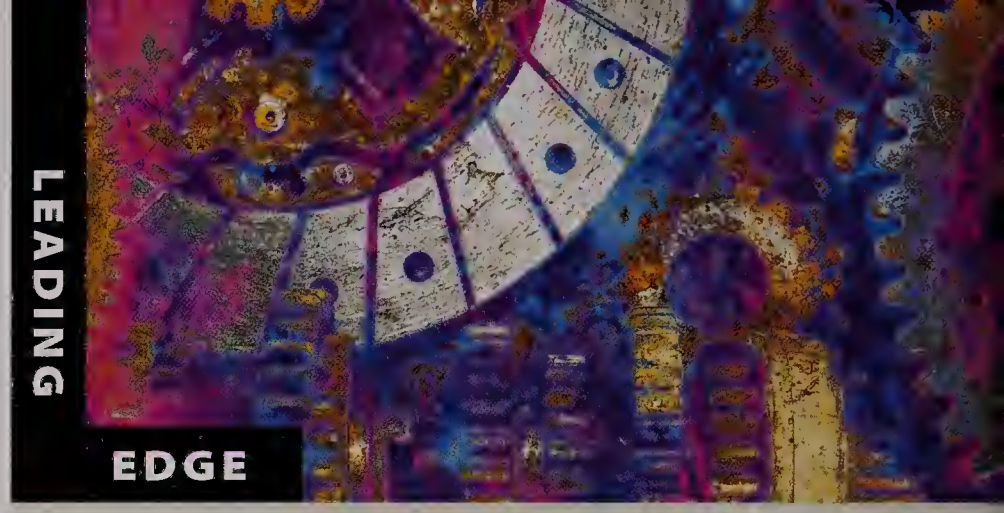
Farmland Industries Inc., the largest farmer-owned cooperative in North America, is using CrossWorlds technology in OneSystem Group (OSG), a joint venture it operates with Ernst & Young LLP. OSG's mission to provide technology services required by Farmland, its member cooperatives and its producers. Dick Weaver, OSG's business area manager in Kansas City, Mo., says CrossWorlds products are allowing his organization to create a single solution across the heterogeneous computing environments with the cooperative system. "As an SAP-centric organization, we needed a way to exchange data with our local cooperatives. Rather than extend SAP all the way down to the local level, which would have been cost prohibitive as well as disruptive to the cooperatives, we decided to integrate the local applications with SAP at Farmland," he says.

To interconnect SAP to various local standalone applications, OSG has implemented 3 of 15 CrossWorlds components. The only major stumbling block Weaver has experienced to date has involved connecting SAP to legacy DOS applications still used by some co-ops. "The facilities for application interfaces in these programs are lacking compared with newer products," he says. This has required Weaver's IS team to do some hand coding. "It's been a problem, but we haven't found anything insurmountable yet," he notes.

Messaging Is the Medium

Messaging-oriented middleware, which is designed to handle all interprogram communications logic through message queues, is another technique that can get ERPs and standalone applications to exchange information. (For more on message-oriented middleware, see "Will the Message Get Through This Year?" *CIO* Section 1, March 1, 1998.) New Era of Networks Inc., an EIA solution provider based in Englewood, Colo., uses messaging-oriented middleware in its flagship NeoNet product. "NeoNet fits between different software applications to transport and translate information," says John Magee, New Era's CIO. "It takes a message, such as a transaction, and intelligently routes and reformats that message for one or more target systems."

There are several advantages to going the messaging-



Rack 'em and Stack 'em

WE'RE THE FIRST ONES TO SAY that servers just aren't sexy, but every so often one comes along that proves to be an exception. IBM Corp.'s **Netfinity 5500** has a slew of high-availability and uptime features built into it for use in the electronic commerce arena. Standard features include a 350 or 400MHz Pentium II processor, 128MB of RAM, a RAID controller and expansion space for up to 600GB of storage (hard drives, DLT or other tape drives).

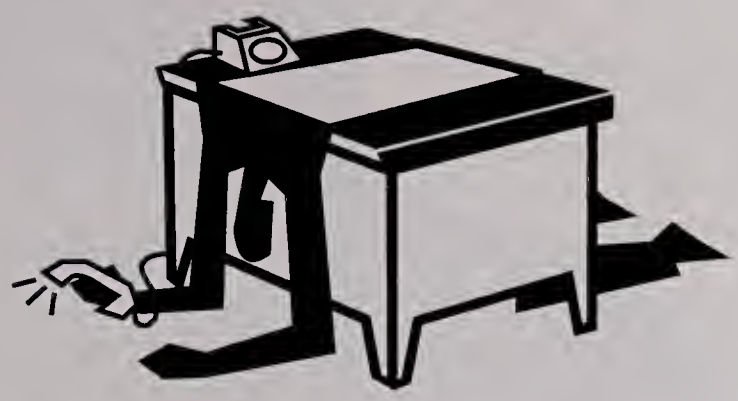
For the first time, users can remove and replace PCI adapters without powering down the server. Diagnostics software lets users more quickly identify failed components. Also included is asset management and configuration software to ease setup and monitoring. The Netfinity 5500's case is 19 inches wide for easy rack-mounting as well. Pricing starts at $6,269. For more information, contact an IBM reseller or visit *www.us.pc.ibm.com/netfinity.*

Keeping Track of Sex, Drugs and Rock 'n' Roll

THE NIELSEN FOLKS RECENTLY CONDUCTED A STUDY at Apple Computer Corp., AT&T Corp. and IBM Corp. and discovered that employees had spent the equivalent of 350 eight-hour days just looking at *www.penthouse.com*; the study didn't check on other X-rated sites visited. (Maybe that explains the productivity paradox.) If studies like that make the hair on the back of your neck stand up—from the standpoint of both productivity and sexual harassment—you may want to look into **DiskTracy Network,** a network version of Houston-based WatchSoft Inc.'s Internet monitoring software for the Internet.

The software features a URL tracking system that logs sites that a network's users access as well as the number of times the site was visited. It can keep track of files relating to sex, drugs, violence, racism, hacking or any other kind of sensitive or illegal material, as well as detect files that users have disguised by changing the format name. According to the company, its logs provide the evidence necessary to confront employees spending too much time on activities unrelated to business.

DiskTracy Network's customizable text-search dictionary can also screen for files containing proprietary or company-sensitive terminology. Pricing begins at $599 for 10 workstations. For more information, contact 888 709-2824 or visit *www.disktracy.com.*



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oriented middleware route, says Magee, including the availability of security and other management-layer services. The technique also allows messages to be sent and received when the program at the opposite end isn't running. "This is a particularly useful feature for links between departments and over vast distances," he notes.

NeoNet supports a wide range of ERP products, including SAP, Baan and J.D. Edwards applications. The software can also be used by organizations that need to move information between many kinds of legacy environments and modern applications. Discover Brokerage Direct Inc., a division of Morgan Stanley, Dean Witter, has used NeoNet for a little over a year to deliver and replicate data in real-time from a mainframe legacy system to a client/server Unix system, says John MacIlwaine, chief technology officer at the San Francisco-based firm. The brokerage, which operates an Internet-based trading platform, passes 50,000 to 75,000 transactions through NeoNet a day.

MacIlwaine says NeoNet, like other EIA products, presents a formidable learning curve. He notes that Discover brought in a team of New Era consultants to get the system up and running. "We had a pretty tight deadline and I didn't want my engineers focusing on how to implement the product." MacIlwaine adds that while NeoNet doesn't require any direct hands-on programming, it does present a wide range of settings that users must adjust in order to install and fine-tune the link. "It isn't the sort of product that you plug in and type 'install,'" he says.

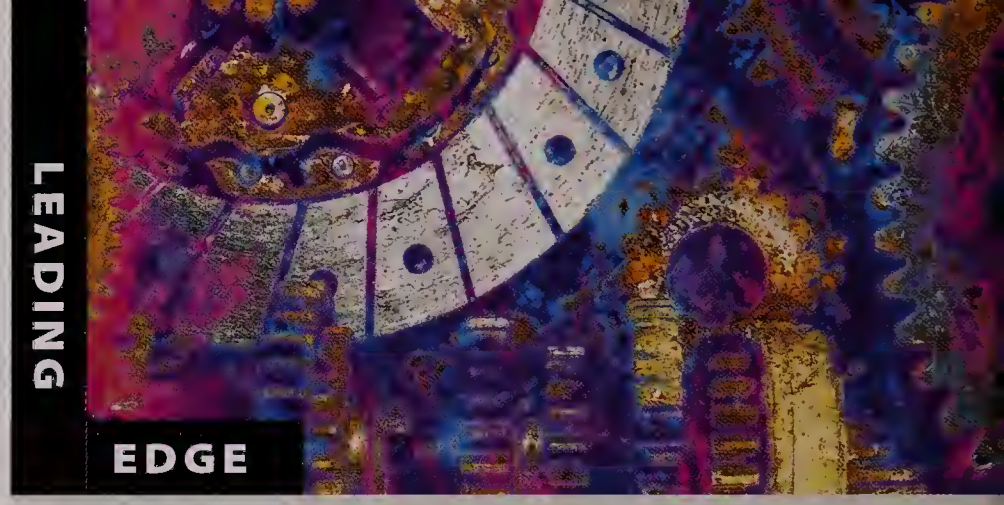
The Right Tool

Given this complexity, finding the right EIA tool for an application integration project requires a substantial amount of research, says Philip Costa, an industry analyst with Giga Information Group in Cambridge, Mass. Success stories aside, he notes that since the EIA software market is in its formative stages, some vendors are still struggling to meet customers' exact needs. "Most vendors have the popular applications pretty well covered," says Costa, "but CIOs may run into problems when trying to integrate an ERP with an obscure or custom application." (See, for example, Farmland's difficulty in linking DOS applications.)

At the same time, major ERP vendors themselves are beginning to address the need to link their products to front-office applications. A recent report from Hurwitz Group Inc., a technology research company based in Newton, Mass., found that ERP vendors such as SAP, Oracle and Baan are developing their own compatible front-office solutions. That means more—and better integrated—options for CIOs.

Ultimately, getting an EIA to link applications flawlessly can be tricky, says David Folger, workgroup computing program director for Meta Group Inc. in Stamford, Conn. So why tackle ERP integration at all? Simple, says Folger: "In any event, it's still usually easier to create an integration link than to develop a custom-coded solution in-house." CIO

Mt. Laurel, N.J.-based freelance writer John Edwards can be reached at edwords@prodigy.net.



In Search of Knowledge

I ONCE HAD A VERY WISE BOSS who described the Internet as "99 percent information-free" (this was in 1989, amazingly enough). If you concur with this viewpoint, you may want to look into Arthur Andersen Knowledge Enterprises' **KnowledgeSpace**, a service designed both to deliver and filter information across the Internet.

Several services are available through KnowledgeSpace. Global Best Practices offers access to Arthur Andersen's knowledge base, including some four dozen interactive diagnostic tools to help improve business performance (Arthur Andersen's goal is to add one tool every week). The Business Radar service provides personalized news culled from more than 75 business publications and incorporates analysis from Arthur Andersen consultants and editors. Subscribers can also submit questions to the AskNetwork, a team of researchers who promise to deliver answers within 48 hours. Other features include links to more than 300 business-related Web resources, updates on personal finances through quote.com and online broadcasts from Arthur Andersen personnel, financial experts and academicians.

It's not cheap, however, unless you consider an annual cost of $365 cheap (that's just $1 per day, but it also means you pay for the days you don't work, assuming there are any). For more information, call 888 577-8778 or visit *www.knowledgespace.com.*

Moving Pictures

IF YOU'RE WONDERING WHAT TO DO with all the processing power of a 400MHz Pentium II CPU, think about moving pictures. Not movies per se, but moving pictures. Infinite Pictures Inc. in Portland, Ore., has developed a technology called **SmoothMove** designed to film interactive videos for folks in real estate, architecture, travel and other industries, as long as the end users' PCs are equipped with Intel's highest-speed CPUs.

Like any other movie, SmoothMove is a series of frames. The difference is that it's shot with a special camera called the Dodeca 1000 Immersive Video Camera developed by Dodeca LLC, which captures 30 frames per second of spherical panoramas. This means that with the finished product, you can pan in any direction. Infinite Pictures expects this to be a boon for electronic commerce, since users will be able to see items for sale from any angle.

SmoothMove costs $549 on CD-ROM and $499 for electronic download. The Dodeca 1000 camera requires a video-capture card and post-production software (its price has not yet been determined). For more information, call 800 990-2449 or visit *www.smoothmove.com.*

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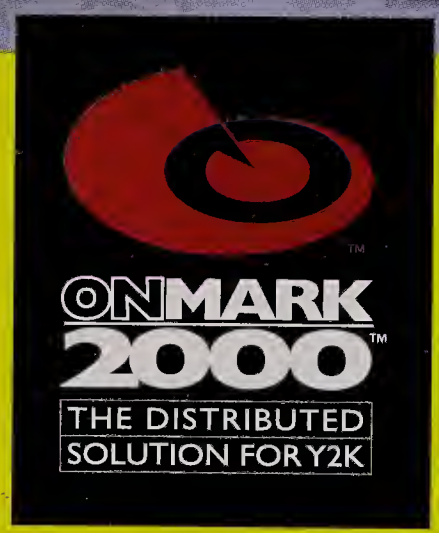

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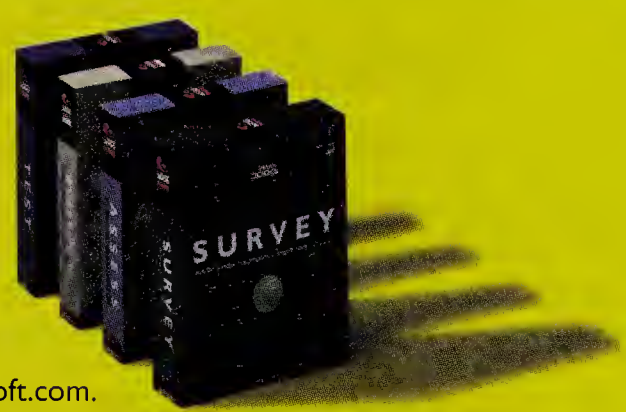

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ShopTalk

Home Nursing Agency's Craig Cuyar on the New Breed of CIO

Spotlight On:

Craig Cuyar, *CIO, Home Nursing Agency, Altoona, Pa.*

- **Line of Business** Home health-care services
- **Bio** CIO of Home Nursing Agency for three years; prior to that, director of the Center for Advanced Technologies for the Altoona Area School District
- **Day to Day** Serves as a bridge between the IS department, the business and the nurses
- **Challenges** Integrating disparate systems and keeping up with new technology trends

CIO: How does the new generation of IS managers differ from the old?
The new guard is generally much more comfortable with technology because they grew up with it. Also, most Gen X CIOs have a different mentality from their predecessors. If I compare myself with the [older] CIO of the main hospital I'm associated with, I'm struck by the difference.

The new generation of CIOs is also more comfortable with creating a culture of acceptance and innovation around the infrastructures they build. All CIOs today have to think about building a collaborative infrastructure with e-mail and corporate intranets. But the new breed will spend a lot more money and time creating the culture around it.

How will the experiences of younger CIOs prepare them for leading IS?
Most younger CIOs will be more highly educated than their predecessors. The reason I got a PhD was to prove myself to upper management. It used to be that a high school diploma was the ticket to getting a good job. Now it takes a master's degree to separate yourself.

In addition, the courses I was exposed to in college were much different from what my predecessors were offered. I came out of college classes that were actively using HTML and the Internet, whereas most CIOs didn't have that exposure. They're trying to deal with a younger IT staff that is familiar with this stuff, and sometimes they are finding it difficult.

What will the implications of the increased formal education level be?
Because they'll be better educated and will have been exposed to different scenarios, many CIOs in the future are going to be more versatile. My theoretical background in business helps me look at problems from a systemic view and apply a theory base to solve them. I have an advantage over CIOs who aren't formally schooled in changing business processes around the adoption of IT.

Up-and-coming CIOs will also have better people skills. I had to take a four-hour oral comprehensive exam for the completion of my PhD program. That experience required me to think quickly and improve my verbal and problem-solving abilities. [The skills I gained then] help me now when I'm trying to teach the nurses about the benefits of technology. For example, right now we're rolling out laptops to the field, and a number of our nurses are concerned that we will use the increased productivity as rationale for reducing staff.

I'm able to take techie terms and break them down into discernible chunks of information that nurses and business people can use. Yet, I can go back to my computer programmers and speak on the techie level they expect from a CIO.

What will be the major issues facing CIOs of the future?
Consolidation and integration of systems will continue to be important. Another challenge is knowing how to spend money appropriately. Moore's Law [named for Gordon Moore, cofounder of Intel, who says that technology processing power doubles every 18 months] mandates that all hardware will be obsolete in 18 months. How can I demonstrate the value of technology purchases to my board and justify the depreciation of that asset? This is only going to get worse for CIOs in the future. We must learn to build a scalable infrastructure with components that we can pull out and replace. We also have to build business models around the depreciation of those assets. That is the challenging part.

–Jennifer Bresnahan

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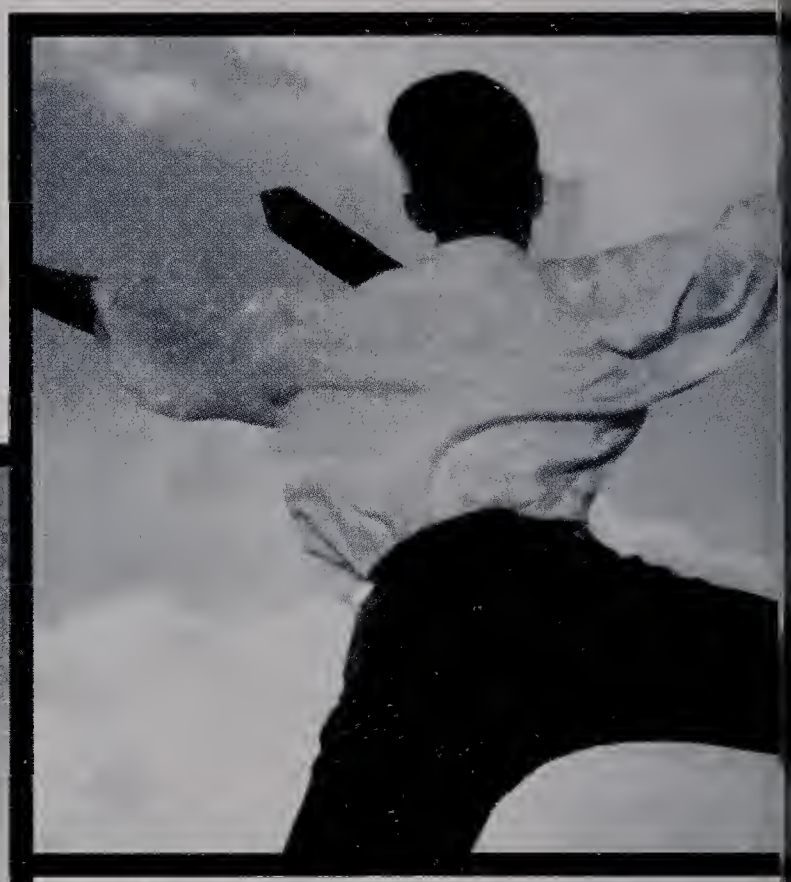

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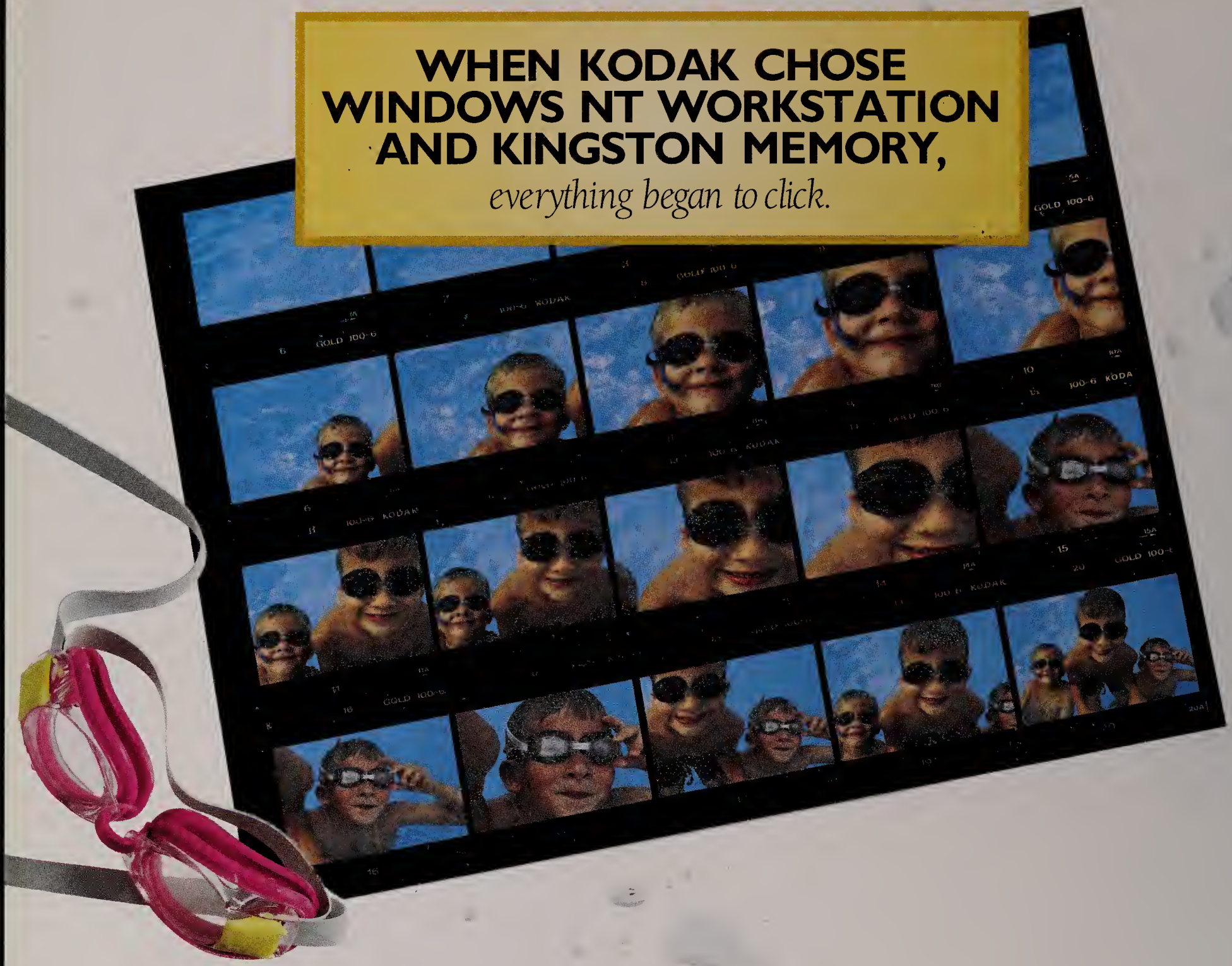
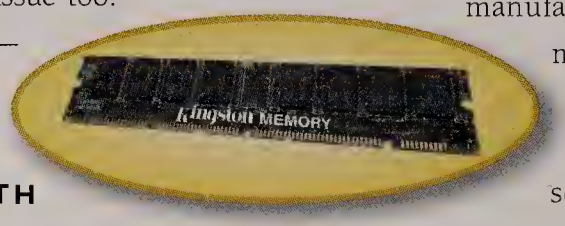
WHEN KODAK CHOSE WINDOWS NT WORKSTATION AND KINGSTON MEMORY,

everything began to click.



❶ KODAK LOOKED AT ALL THE OPTIONS. But how many operating systems would you trust with 45,000 users? Stability and reliability were Kodak's first priorities. But because their networks are scattered all around the globe, security was a big issue too. In the end, the decision was easy—Microsoft® Windows NT™ Workstation 4.0.



❷ NEXT, THEY UPGRADED BOTH NEW AND EXISTING PCS WITH KINGSTON MEMORY. That allowed them to expose all the best features of Windows NT Workstation. Users experienced an increase in performance. And thanks to Kingston's reliability and compatibility, the transition was smooth for network administrators. Putting ample memory on every desktop also helped lay the groundwork for the future.

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